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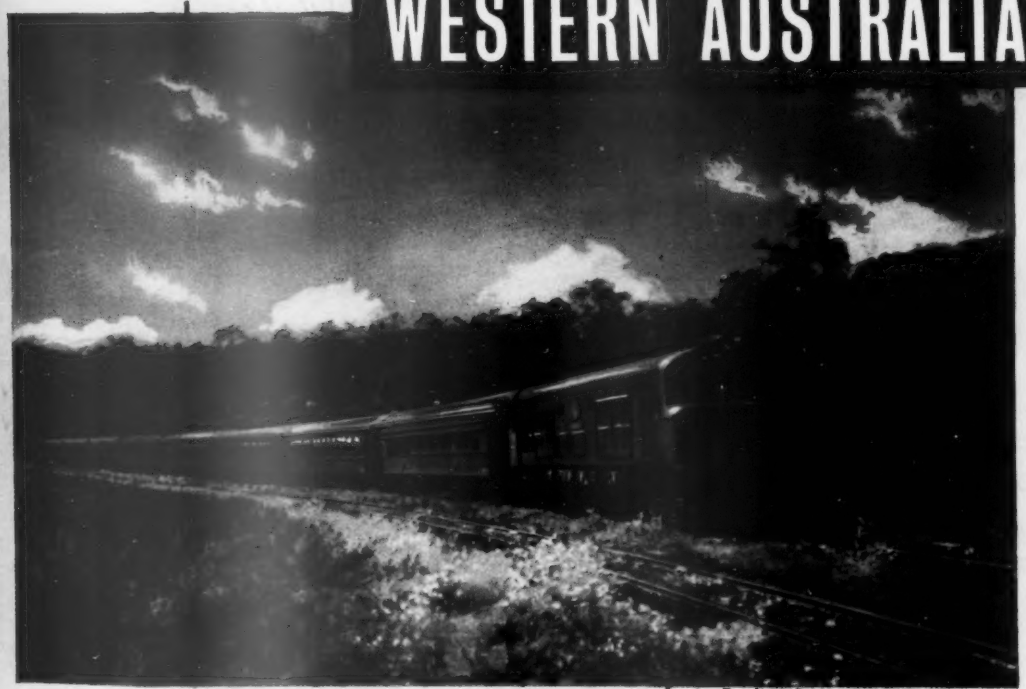

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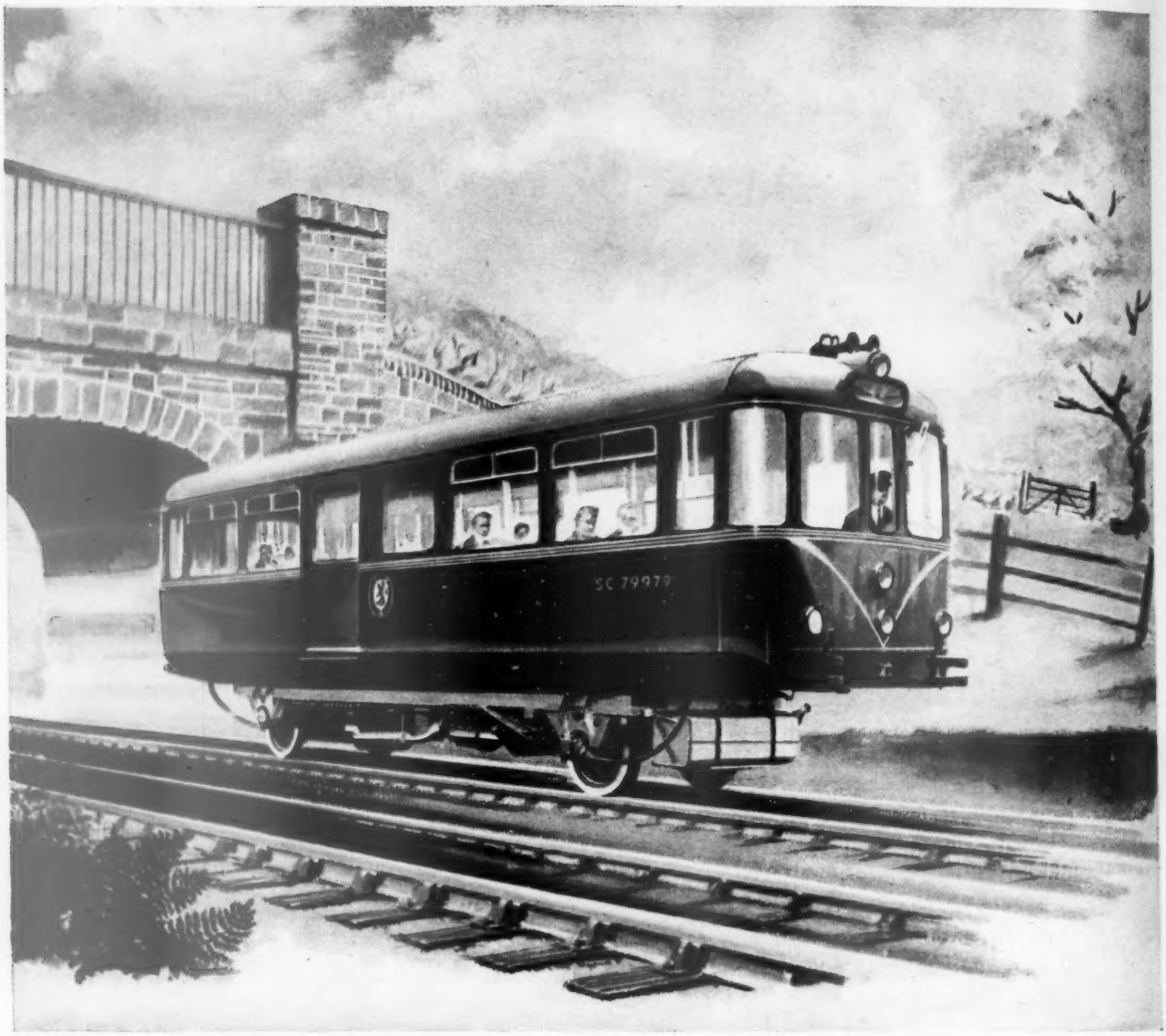

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Annually £5 by post Single copies, Two shillings.

Registered at the G.P.O. as a newspaper. Entered as second-class matte rin U.S.A.

Editor : B. W. C. Cooke, Assoc. Inst. T.

Vol. 109] FRIDAY, OCTOBER 17, 1958 [No. 16

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Railway Wage Structure Review

THE time which has been occupied in agreeing the terms of reference of the independent committee of inquiry into the railway pay structure has been very much greater than might reasonably have been expected. This inquiry was promised by the British Transport Commission as part of the pay settlement with the unions early this year. During the last two months there have been discussions between union leaders and B.T.C. representatives as to the form that the inquiry should take. It would appear from reports in the press that the union leaders have been anxious to transform an inquiry into the structure of railway pay into a review of railway wages; that was not the intention when the offer was made nor is it reasonable in the light of the Tribunal's finding or the settlement which was reached. Probably the railway union leaders are beginning to realise that there are disadvantages in being the first in the queue for wage increases. It is not the first time that the railwaymen, having been at the top of the line, have had the mortification of seeing other unions who were less quick off the mark secure greater percentage improvements in pay. That does not justify an immediate scramble to improve the relative position of the railwayman. It is precisely this kind of action which has had such unfortunate effect on the national economy in recent years. The predicament of the union leaders is made all the more acute because of the increasing realisation that the railways have not the money to meet improvements in pay. When the last wage settlement was reached it was generally understood that the money to meet it would have to be found from within the industry. That is a process which becomes increasingly difficult and less likely to be realised as the months slip by.

The Late Major Malcolm Speir

SCOTTISH railway affairs have been bereft of a familiar figure and an outstanding personality in the passing of Major Malcolm Scott Speir. Coming of a well-known railway family—his brother was the late Colonel K. R. N. Speir, Passenger Assistant to the Continental Traffic Manager L.M.S.R. from 1927 to 1943 and Secretary of the Transportation Club for 12 years—Major Speir devoted 40 years of his life to railway operating in Scotland. The study, early in his career, of railway methods in America, and his military career during the 1914-18 war, added much to his knowledge and ability. On this foundation he built a career which was to command respect in railway operating circles. A man of strong character, Major Speir was an individualist, and believed in tackling problems at once and in his own way. Even though his decisions were not always popular at the time, they usually proved to be correct. His ability and wide knowledge of all operating matters, and his long experience made him well suited to his ultimate appointment as Chief Officer for Scotland. Major Speir had a wide circle of friends and his death will bring a sense of personal loss to many railwaymen.

Developing Southern Tanganyika

THE proposed branch of East African Railways & Harbours, from Kilosa on the Tanganyika Central Line to Mikumi, some 44 miles south, can be regarded as the first stage in the development of rail communication with the Kilombero Valley and the Southern Highlands Province. This was one of the railway projects considered by the Tanganyika Transport Advisory Council at their meeting in June, and expenditure of £800,000 was recommended on its construction as part of the development covered by the £8,500,000 Loan Act of 1957. The line will carry the produce of the Southern Highland Province: wattle extract from Njombe; rice, cotton, and other crops from Igawa; tea from Mufindi and Rungwe, and possibly pyrochlore from the area south of Mbeya; besides the potential of the Rufiji Basin and the Kilombero Valley. It is conservatively estimated that some 85,000 tons a year would be using the Mikumi railhead by 1966. Traffic to and from the areas south of Mikumi will be borne by existing road services until it is considered economically sound to build the projected North-South railway.

More Railcars for British Railways

THE popularity of diesel railcars with the travelling public and their good performance are evident from the increasing number of these vehicles being ordered by the British Transport Commission. As recorded in our Contracts and Tenders columns this week, orders for another 168 diesel multiple-unit vehicles have been placed. All are allocated to the Western Region; 108 are to work suburban services from and to Paddington, 15 will operate in the Bristol-Taunton area, and 45 in Devonshire, west of Newton Abbot, and in Cornwall. The Pressed Steel Co. Ltd. is to build 123, and the Birmingham Railway Carriage & Wagon Co. Ltd. the balance of 45. The designs, it is stated, will resemble those of vehicles of this type previously built by the manufacturers. Wherever railcars are operated by British Railways there have been considerable economies, and much traffic has been created. The steady flow of deliveries is enabling many new railcar

services to be introduced in quick succession just when these improvements in service are badly needed. It will be interesting to see, in due course, how the new cars will be used on the Paddington suburban services and in the West.

Increased Comfort of Long-Distance Travel

THE long-distance expresses of British Railways running on Mondays to Fridays, according to most recent accounts, are generally comfortable and clean, and the catering satisfactory, and sometimes very good. The best travel is in mid-week, which should promote sale of mid-week tickets. The same high standards seem to apply at this season to weekend travel also, though there is much unpunctuality on Sunday evenings caused mainly by work on the line. We travelled on recent Saturdays by expresses of three Regions, and found them satisfactory in all respects, including punctuality, and good payloads without crowding. There seems indeed to have been an all-round improvement in long-distance services, except at weekends in summer. Unfortunately a large proportion of passengers make their few long journeys in the year on Saturdays in July and August, largely because of enforced Saturday-to-Saturday booking of holiday hotel and other rooms. There are two standards of train service, of which the much inferior, on summer Saturdays, has been experienced by those who seldom travel at other times. If school holidays restrict the season, further efforts should be made to induce those who let rooms to accept weekly bookings from days other than Saturdays; this would result *inter alia* in greater comfort in holiday travel and enhance the reputation of British Railways.

Luxurious Travel over the Australian Desert

THE Commonwealth Government Railways have long sought to provide the most comfortable rolling stock possible on the 4-ft. 8½-in. gauge Trans-Australian Railway, the longest single section of the transcontinental route between Perth and Adelaide and cities in the east. In the early days competition for traffic was with the sea route, with a passage through the Bight, which is often rough. Today there is intensive air competition as well. Travel by train involves two changes at breaks of gauge between Perth and Adelaide, and long runs through the desert, with its wide variations of temperature. Despite what might seem disadvantages, the rail route is stated to be very popular. This is largely because of the comfort of the trains, including those on the 3-ft. 6-in. gauge Western Australian Government and 5-ft. 3-in. South Australian lines. In the newer stock of the T.A.R., described elsewhere in this issue, air conditioning ensures comfort in the extreme ambient temperatures. The train necessarily has some characteristics of a ship. There is much lounge and other accommodation which might strictly be termed non-revenue-earning, though it is an essential amenity. A piano has long been a feature of the T.A.R. transcontinental express. Running is reported by travellers to be smooth at the high speeds attained with the diesel locomotives.

Novel End-on Girder Erection in Canada

IN connection with the construction of a girder bridge on the new Chibougamau branch in Quebec Province, the Bridge Engineer of the Central Region of the Canadian National Railways has evolved a new method of launching long plate girders down a ramp with a simple crane. The ramp consists of a pair of light-weight Warren truss girders. Each truss, 5 ft. deep, is erected across the 100-ft. opening by a 40-ton locomotive crane fitted with a 110-ft. jib. Braced together at rail-gauge centres, the trusses are inclined down from near rail level at the near end to bridge-girder level at the far end. The slope is about 1 in 10. Rails, clipped and bolted to the top chords, are jointed to the end of the track rails. The plate girders, brought forward one at a time, are supported at the leading end on a trolley and at the other by the crane. As the crane moves forward, the trolley runs down the incline. After launching, the far end of the plate girder is jacked down off the trolley into its required position while the other end is lowered into place by the crane. This method is being used to place 101-ft. plate girders as temporary supports under part of a permanent truss span during erection; it reduces to a matter of inches the jacking down of the heavy plate girders, so often a tedious and slow operation after the end-on launching of a deep girder beyond the reach of a crane.

The Twenty-Four Hour Clock

MOST railwaymen, but a minority, probably, of the public would agree that once they were accustomed to it, the 24-hr. system for timetables helped to avoid confusion between a.m. and p.m. A letter from a correspondent elsewhere in this issue urges its adoption for this reason. It is used by railways on which overnight journeys are frequent, as in India, and also on the Continent, because international services are involved, besides night travel; also, for the same reasons, by British Railways in their timetables of shipping services to and from the Continent, with their international connections. Apart from public opposition to a change, it is doubtful whether its use for internal services in Britain would justify the cost of the typographical alterations. The change proved expensive in France before the war of 1914-18, when printing costs were relatively low. The railways of the U.S.A., Australia, and South Africa manage well enough on the 12-hr. designation, though the South African Railways use a vertical line to show p.m. times, as did the former L.M.S.R. If the Government of this country were to extend use of the 24-hr. clock in dealings with the public, there might be a case for British Railways following suit.

The Realities of Road Competition

MANY railwaymen in this country seldom travel on trunk roads. This may be one reason why a good many of them do not realise how much traffic goes by road, how much progress has been made in designing road vehicles for bulky and heavy loads, and how great an investment of capital this represents. If they knew the facts, they would certainly increase their efforts to improve the goods services of British Railways and cease from grumbling, as some are reported to do, at expenditure on the modernisation plan. As "The Man on the Line" points out in the current issue of *British Railways Magazine*, modernisation of plant and equipment such as marshalling yards, motive power, and signalling is essential, if the railways are to compete effectively with the roads. Quick and reliable service is needed, and compliance with customers' wishes. "The Man on the Line" terms this a "modern service," which can be achieved, he states, only with modern equipment. He might have added that a great deal of personal effort also is needed from many thousands of railwaymen.

Serious Block Working Irregularity

THE collision at Ince Moss Junction on February 17, 1958, in which a guard lost his life, was caused primarily by great carelessness on the part of a signalman who gave "train out section" for a light engine without seeing it; he took some noise he heard to have been made by it in passing. It was in fact, as will be seen in our summary of Colonel W. P. Reed's report in this issue, standing a short way inside an extended block section, in which eight signalboxes were switched out, and had been there for some 26 min. without any attempt being made to protect it. The driver left the footplate to telephone about a conductor driver, for whom the Preston shed foreman had asked, and whom he expected to join him at that place. It was very fortunate that the overtaking train had not had time to attain any great speed. Had the signalling blunder been committed only a little earlier the consequences of the collision would certainly have been much more serious.

The Cost of Signalling Equipment

BECAUSE of the large amount, £150 million, being spent on signalling work in the British Railways modernisation plan—nearly one-half of it for lines being electrified—keeping down the cost of signalling equipment and of its installation and maintenance is vitally important. This was, rightly, stressed by Mr. John Ratter, then Technical Adviser, and now Member, British Transport Commission, at the recent annual dinner of the Institution of Railway Signal Engineers. An account of this function appears on page 489. Efforts made by the Institution to keep down costs in signalling were mentioned by the President, Mr. J. F. H. Tyler. They include the Miniaturisation Committee, where railway signal engineers and manufacturers co-operate in re-designing certain equipment. He pointed out that increased efficiency in operation caused by signalling improvements produced its own economies. There are lines in many countries which need not have been doubled or quadrupled or even electrified in recent years if the signalling had been improved. The Inspecting Officers of Railways of the Ministry of Transport are penetrating observers of the work of signal engineers. It was encouraging to learn on this occasion from Brigadier C. A. Langley, Chief Inspecting Officer, of his impression after many visits of inspection that meticulous care was taken in installing and testing signalling equipment on British Railways.

Multiple-Unit Electric Stock for L.T.S. Line

ALTHOUGH much civil engineering work remains to be completed in connection with the electrification of the London, Tilbury & Southend Line of British Railways, Eastern Region, at 25 kV., 50 cycles, construction of the multiple-unit stock is already in hand. There are to be 112 four-car sets. Each set will seat 363 passengers and will consist of a driving trailer open second class coach, with batteries, battery charging and compressor rectifiers, and compressor equipment mounted on the underframe; a luggage motor second class coach, on which is mounted the pantograph over the luggage compartment; a trailer composite coach; and a driving trailer coach. Trains will be made up of one, two, or three sets. The coaches will be used initially on the Liverpool Street to Shenfield, Chelmsford, and Southend services when the supply to this section has been converted to 25 kV. while the existing d.c. stock is converted for operation on the a.c. system. The new stock is being built at the British Railways works at York and Doncaster under the supervision of Mr. G. H. Taylor, Assistant Carriage & Wagon Engineer, Eastern and North Eastern Regions. Apart from the higher speeds affording shorter journey times, it will set new standards of comfort on the Tilbury Line.

B.R. Diesel Freight Power

TO obtain adequate train braking power, as all freight wagons are not braked, the British Railways enquiry for 1,700-h.p. locomotives specifies a C-C locomotive up to 108 tons weight, with 18 tons axle load so that working may be undertaken on mineral branches and yards. Probably the freight wagon braking programme will be complete by the end of 1963. The new diesels will not be in service before 1961; so to save operating adjustments for a transition period of two to three years the new freight power is to be penalised throughout its life by 30 and more tons weight above what is otherwise necessary. A starting tractive effort above 40,000 lb. is useless in this country, because of coupling strength; it will be many years indeed before all British couplings are able to take more. A diesel locomotive adhesion weight of 68 tons is ample to take up in service a starting effort of 40,000 lb. For traction, nothing bigger than a 72-ton B-B unit is needed for the new British Railways requirements. Fortunately, as already proved in practice, a 1,700-b.h.p. locomotive of that weight and layout can be built easily and successfully. Can anything bigger really be called economic? Surely there is some cheaper solution to a two- to three-year braking problem than 30 tons to be carried about for 30 years.

Railway Congress in Retrospect

THE seventeenth International Railway Congress which was concluded in Madrid last week was most admirably conducted by the Spanish National Railways administration as hosts, and by the Permanent Commission with its long experience of successful meetings of this kind. The former is warmly to be congratulated on the outstanding interest of the technical visits and cultural tours which it made available to the visitors who were keenly appreciative of all they saw, as well as of the abounding courtesy and hospitality they received from all quarters. There is much to interest the transport man in and around Madrid—and not a little to excite the envy of many. The spacious planning of the chief highways of the capital was not lost, for example, on the representatives of the London Transport Executive who were present. The north-south underground main-line railway link, already referred to in these columns, will undoubtedly stimulate discussion in many centres apart from London, where the need for such an amenity is even greater than in Madrid by reason of heavier traffic movement and potential as well as a higher level of surface traffic congestion.

Of the business proceedings of the Congress, which followed the well-established formula, one is forced to wonder whether the time has not come to effect changes which would have the result of bringing them more into accord with modern needs and objectives. For, many months able and conscientious reporters were occupied in collating replies from many widely divergent railway systems to a series of questions, correlating the answers and compiling reports for presentation to the sectional meetings. There the reports were debated, often at length and in great detail, and summaries agreed for submission to the plenary session. Although those conclusions may be considered, by reason of the skill and care with which they were founded, as laying down a form of standard, they are not in any way binding on members of the International Railway Congress Association. Whether or not they are followed in practice will depend entirely on the experience and the direction of development of the railway concerned. In some cases the tenets laid down will be followed, largely because they are axiomatic; in others, they will have little validity because they are or may be exclusive of practice being followed or likely to be developed.

Because of the world-wide variety of practice, availability of materials, manpower supply, stages of development, traffic and operational requirements—to mention but a very few of the diverse factors, all varying in their incidence—it is not possible or desirable to lay down hard and fast standards for all railways. At best, there must be a wide element of compromise even in the evolving of principles. A good deal of time frequently is occupied in the matter of definition, not only of principles but often of words.

It might well be that the useful purposes of the Congress—and they are many and valuable—would be served as well, if not better, if the technical sessions were devoted to discussion of selected papers on a short list of subjects of common interest. The exchange of views and experience would be of great value to railwaymen from all countries and the Congress would become the clearing house of the combined knowledge of its member administrations. The international congresses are already of the greatest value because of the opportunities they afford for the bringing together of foremost railway administrators, executives and technicians from all over the world. Much of the good work of the association is done by means of the informal contacts which are established outside the working sessions. It may be that some amendment to the procedure such as that outlined might add still further to the status and importance of the association.

Management in Transport

A DISTINCTION between the science of organising management on the one hand, and the art of leadership on the other, was rightly drawn by Major-General G. N. Russell in his remarkable Presidential address last Monday to the Institute of Transport. Nobody is better qualified to speak on these subjects. As a senior military officer he has had long experience of transport both as provider and user. His responsibility over the past 10 years for the efficiency and prosperity of the nationalised road haulage undertaking has been marked by success in circumstances of particular difficulty. More recently, as a member of the Eastern Area Board of the British Transport Commission, he has had opportunities of examining closely the working of the Eastern Region of British Railways. His insistence on the importance of individual effort in transport undertakings is timely. In no other industry are most of the workers so far removed from managerial control, and so able, through their own efforts and initiative or lack of them, to contribute to the success or failure of the undertaking. On railways especially the keenness of individuals must be subordinated to the demands of teamwork. Train operation is a case in point; there is scope for the efforts of individualists, provided that they exercise self-discipline.

A truth of great importance emphasised by the author is the necessity for those engaged in transport to realise that it is susceptible to quick change. The succession of, and changes in, the modes of transport show the danger of acting on the assumption that at any one time the situation is static. Nobody can foretell the possibilities of the nuclear age. Looking less far ahead, one may ask what the future may be of transport of semi-solids by pipeline. As he points out, one must not "face the problems of the atomic era with a horse-and-cart mentality." Changes in the shape of transport facilities are matched by changes in the types of goods to be carried. One may ask how far oil will supplant coal in the next 10 years, and atomic power render unnecessary the transport of both coal and oil in the following decade. Railway managements must bear this in mind in planning for the future. Changes in the habits and requirements of transport users must also be dealt with. The individualism of the pre-railway age was superseded by the more regimented movement by rail of men and merchandise in bulk, a phase which has, in turn, given place to what he calls the "do it yourself" way of life, which shows itself in abundance in the family motorcar and the "C"- licence vehicle.

As to the science of management, Major-General Russell emphasises the importance of a clear-cut organisation, whether functional or divisional, though he prefers the latter because of the characteristics of the transport industry. Most railwaymen will share his preference. It is necessary, as he states, to put on one person the responsibility to give service to his customers as "captain of the local team, without his having to look over his shoulder to some distant headquarters for technical instructions." He rightly adds a warning that it is important to make it abundantly clear which form of organisation is in fact in operation. Endless confusion can be caused by failure to do so, as some railways have found to their cost. He insists that, however organised, basic units must be small enough for everyone to know everybody, and, perhaps most important of all from the service point of view, for a personal relationship to be established with those whom they serve. We believe that most transport managements today are aware of this truth, after experiencing some of the difficulties caused by the impersonality of unwieldy units. He rightly stresses the desirability of a manager being obliged to render a financial account of his stewardship. This is a most desirable discipline and spur to efficiency.

His views on the desirability of quarterly meetings called by the general manager to explain policy to subordinate managers and departmental heads will be accepted by many men in authority. An important point is the recommendation that there should be only four meetings a year. Conferences and meetings are the fashion nowadays. The more complex the organisation, the more they tend to multiply. Managements of large railway systems particularly should be careful to avoid an excess of meetings: much can be done by well-planned tours of inspection. Joint consultation is important, as is the knowledge among the staff that all realise that the greater economic security of modern times calls for an ever greater degree of responsibility.

The art of management according to Major-General Russell, is leadership, the human touch which breathed life into all systems, and imposition of the will of one man upon others. The attributes of a leader—courage, will-power, balanced judgment, knowledge, and flexibility of mind—would get a man nowhere unless they are seen against a "backcloth" of integrity. He believes that if men are satisfied that the leader has these basic virtues, the others will fall into place, and the organisation will have the man it needs.

The Institute of Transport, he adds, can play its part. He agrees with its policy of establishing itself as a learned society and in insisting on the academic approach to the problem both in their examination system and in providing a forum of discussion of transport problems. Secondly, the senior men in the profession should, through the Institute, encourage and open the door to the more junior; leadership cannot be taught as an academic subject, it must be instilled by precept and example.

The above are only a few points in an address full of weighty and penetrating observations, clearly presented, the product of experience and reflection, which are worth studying by men of all grades in the transport industry. The President has composed much of his address in the hope that it would reach the eyes of students and more junior members of the Institute of Transport. It should certainly do so; and to take the young into account in this way, as those with whom the future lies, is typical of his fresh outlook on these and other subjects. But views so carefully thought out and expressed with such clarity and vigour need to be pondered also by the older and more experienced men at the head of railway and other transport undertakings.

The French R.S. Sleeper

THE French R.S.-type concrete-block and steel tie-bar sleeper is reported to be growing in popularity on its general merits, and more particularly for use on narrow-gauge lines. Criticisms of certain of its characteristics are sometimes raised; they include objection to its greater weight, as compared with wooden or steel sleepers, as a disadvantage in handling. Its protagonists reply that nowadays so much of the handling is mechanical that the weight is not of great importance. We should have thought, however, that the mechanical handling of a length of prefabricated R.S.-sleeper track might risk distortion or other damage to it, by reason of its heavy blocks connected by comparatively flexible tie-bars. Probably, special precautions are taken to prevent such damage.

The vulnerability of the tie-bars to corrosion is also sometimes suggested as a disadvantage. It is pointed out, however, that these bars are normally of specially-hard rail-type steel and their cross-section is an inverted Y with curved limbs to prevent the collection of moisture and facilitate drainage and evaporation. Moreover, in industrial and other saline areas conducive to corrosion, painting of the exposed parts with red lead has proved a successful protection, notably in Holland. The clip- or anchor-bolts and nuts may also be galvanised and their heads and the tie-bar slots in which they fit are protected above by cement grout and below by drainage side-vents through the block.

The suitability of the R.S. sleeper for narrow-gauge lines stems from its insurance that the ballast is packed only in the correct places, under the rails. The comparatively-short narrow-gauge wooden or steel sleeper tends to unite the two compacted areas beneath each under its centre, and cause centre-binding and side-to-side rolling of rolling stock; this is particularly serious where stock width is so much greater than the gauge. The two separate, wide R.S.

blocks offer more than double the resistance to transverse thrust exerted by the wooden sleeper, another important advantage. This transverse stability also permits of the wider use of long welded rails on narrow-gauge alignments.

The Mechanics of the Train

TODAY, in the midst of a motive power revolution, usages which have grown up with the steam locomotive are rapidly giving way to more effective means and rational methods made possible by diesel and electric traction. The only reliable bases for determining developments and for a better understanding of possibilities are those provided by mechanics. For that reason the paper entitled "The Mechanics of the Train in the Service of Railway Operation" given last Wednesday to the Institution of Locomotive Engineers by Mr. S. O. Ell, Assistant, Research & Development (Rolling Stock) to the Chief Mechanical & Electrical Engineer, British Railways, Western Region, is timely. He stresses that formerly, whilst the traffic pattern remained uneventful and the technical equipment stable in its nature, many of the functions of the mechanics of the train could be performed empirically.

When any novelty is about to be introduced, especially if on a large scale, forward planning is impossible without the help of the mechanics of the train. He contends that this "is absolutely essential in operating research, which is the only efficient way of obtaining maximum productivity of the enterprise at lowest cost and of specifying technical equipment of the right type and the right power" and that because it is concerned with the very life streams of the enterprise, there is no more vital field for research. Mr. Ell quotes a statement made in 1885 by A. M. Wellington to the effect that engineering "in a certain important sense is . . . the art of not constructing . . . the art of doing that well with one dollar which any bungler can do with two after a fashion." One is reminded of a dictum of C. F. Hirshfield, of P.C.C. tramcar fame, that "engineering is an exact science as is evident from the fact that every engineer does exactly as he pleases." It is to be hoped that the author's paper might help to reduce this tendency.

The paper is in the main devoted to the description of a single and effective method of determining train performance in terms of time required to cover the distance and the fuel used to accomplish this. In principle, pure train mechanics are an exact science *per se*, but the results obtained by the application of the equations concerned depend upon the accuracy of the data used. Because of this Mr. Ell considers at first such fundamentals as tractive effort, resistance, and the coefficient of adhesion. These data are presented in an attractively clear and simple fashion unburdened by complexities often introduced by considerations relating to variables of secondary order. His tractive resistance data relate to current passenger stock, to multiple-unit trains, to goods trains, and to the resistance of four types of diesel locomotive recently introduced on the Western Region of British Railways. All this should be of considerable help to engineers considering the design and performance of new motive power.

Experiments recently carried out in the Western Region with a 2,000-h.p. diesel-hydraulic locomotive, he points out, have consistently shown that the border line between spinning and not spinning on dry rails with the ordinary sanding gear used, is reached with a coefficient of adhesion of 0·276. It was also found that severe rail damage might be caused by wheel spinning. To avoid this he suggests that a coefficient of adhesion not exceeding 0·24 should be normally allowed for.

The considerations leading to the determination of the space-time relation are dealt with in some detail. The author shows the methods evolved and applied by him to the construction of a particularly expressive diagram containing data which embrace speed, tare load, and fuel consumption *versus* the train schedule over a certain line. To start with, this method is illustrated for the case of a British Railways Class "8" 4-6-2 steam locomotive when applied to the space-time relationship over the Euston to Rugby section of the Euston-Carlisle route. Although the cost of fuel is only one of many variables affecting the cost of transportation, Mr. Ell rightly stresses its importance, particularly as far as locomotive effectiveness is concerned. He supports and illustrates his contentions with expressions due to G. V. Lomonossoff.

Proceeding from the inescapable conclusions of his arguments he adds to the usefulness of his diagrams by combining the simple and effective train performance computer with the fuel consumption characteristics of the locomotive into a performance and cost of energy computer. Diagrams of this type are produced for each area of the Western Region, and separate computers are compiled for passenger and goods trains; the goods trains are subdivided according to the maximum permissible speeds of train classification. The basis of the computer is the performance of the locomotive running at full power wherever possible, subject only to the permanent restrictions of speed, the maximum speed of the locomotive, or traffic and the braking power. To arrive at the practical schedule, however, allowance is made for random contingencies in the basic schedule. The methods adopted here are explained and illustrated in the paper with the help of diagrams of the Paddington to Newton Abbot section of the Region.

Verification of the methods and presentation of results proposed by the author can only be obtained by comparison with actual runs. Thus in the case of the "Cornish Riviera" express with 393 tons tare, hauled by diesel-hydraulic locomotive No. D.800 at full power wherever possible between Paddington and Savernake, the overall time agreed within a minute, and all intermediate timings agreed to the significant fraction of a minute, given by the computer. Again locomotive No. D.800 hauling a train of 448 tons tare from Plymouth to Paddington, covered 143 miles in 128 min The difference between actual and computed time was only 12 sec. These results must have been of considerable satisfaction to Mr. Ell.

As Lomonossoff has pointed out, permanent way and rolling stock exist only as means of dealing with traffic. Hence many permanent way standards are determined by traffic requirements. Here train mechanics again are the controlling factor as regards speed, track features, and motive power. The economics of these interacting factors must be considered against expenditure on permanent way upkeep. This problem is briefly dealt with. The paper concludes with observations and some data on track testing by vehicle response as practised in the Western Region.

Altogether this is a timely and thought-provoking paper. The wide range of valuable information is presented in a manner which makes it readily applicable to day-to-day problems confronting designers and operators alike.

Erecting a Truss-Girder Skew Span

WHEREVER a through truss-girder bridge has to be built on an appreciable skew a problem arises in connection with the attachment of the cross-girders to the lower chords during erection. Because one of the main girders will have a lead of one or more panel-lengths, it follows that the attachment of the cross girders, normal to the trusses, will be to different panel-points—numbered from the same end of the span—in each main girder. For instance, one end (*a*) of the first full-length cross-girder may bear on the second or third panel-point of the lower chord of the leading girder, whereas its other end (*b*) will be connected to the end panel-point of the other girder immediately over the unyielding support of the main bearing. Consequently, when under load, end (*a*) will be affected by an appreciable deflection, whilst (*b*) will remain unaffected.

If the main girders are supported only at their ends during erection, the camber of each truss will change as the load is built up from the floor, and end (*a*) of the cross-girder will be deflected from the horizontal; subsequent cross-girders will be similarly deflected but in diminishing degree. In such circumstances it is sometimes difficult to effect an accurate fit between the cross-girders and the trusses.

The obvious method of overcoming this difficulty is to

support each truss throughout its length on falsework during erection, but over a river, for instance, the cost of this method might well prove prohibitive. On the other hand, thanks to local conditions being propitious and to materials being available at hand, this method was adopted for the erection of the Swan Street bridge girders under the widened lines at Richmond, Melbourne, by the Victorian Railways, briefly described and illustrated in our issue of July 11, 1958.

However, there, the problem was accentuated by the use of high-tensile steel in the truss girders of the two double-track 143-ft.-long skew spans and the use of high-strength close-tolerance bolts in the site-points between cross-girders and the main girders. The skew is 60 deg. and the girders have a 50-ft. lead equivalent to two panel-lengths. The trusses have been built to a greater camber than would be the case with trusses of mild-steel to counter the increased deflection when working to the higher stresses possible in high-tensile steel. So the levels of the panel-points in the two trusses at each end of a cross-girder differ by a considerable amount, the deck in the unloaded condition being twisted and the cross-girders corkscrewing from end to end of the span. To ensure a good fit in the connections of the floor, the unusual step was taken to support the trusses at every panel-point throughout the erection of the lower chords, cross-girders and stringers. Only in this way, with the camber maintained to the same vertical curve as the trusses had when the cross-girders were fitted in the shops, could all the connected parts be drawn into close contact without the need for heavy drifting which obviously could not be tolerated where high-strength bolts were being used, since any distortion of the holes would reduce their efficiency.

The erection of the web-members and the top chords of the trusses was subsequently completed after the floor had been bolted up and while the whole of the steelwork was still supported on the falsework. That this procedure was possible over a busy highway was due to the fact that the new spans could be erected at a higher level and jacked down on to their bearings after the removal of the falsework. It was also fortunate that stocks of 24-in. × 7-in. steel joists in 40-ft. lengths were held by the railway, and that the new plate-girders for Punt Road Bridge at the other end of Richmond Station were available for use as falsework.

New Zealand Government Railways in 1957-58

IN his report upon the New Zealand Government Railways for the year ended March 31, 1958—a copy of which he has sent us—Mr. A. T. Gandell, the General Manager, expresses concern at the financial result for that year and its current trend. Moreover, in presenting this report to Parliament, the new Minister of Railways, Mr. M. Moohan, stresses the need for better co-ordination of transport throughout the country. He particularly deprecates the great expenditure on roads so often paralleling existing railways, and its result, especially in the South Island, in causing serious railway losses. These entail a South Island deficit of £1,827,302 as compared with a surplus of £773,199 in the North Island.

Decreases are reported in passenger and some goods traffic, but measures to attract new traffic more than balanced the latter, so that total goods traffic was higher than in 1956-57. Moreover, locomotive power was used more effectively and goods-train schedules were improved: also the average tonnage per goods train was a record. The average haul again increased and there was a marked improvement in wagon turn-round. On the other hand, operating costs increased as a result of normal wage and salary increments, improved working conditions, heavier track-renewal, depreciation charges and fuel oil costs.

The report proceeds to point out significantly that the past policy of increasing charges to meet rising operating costs, had had the result that rail transport tended to price itself out of business in competition with other forms of transport. Consequently, general increases in charges were no longer in the interests of the Department. Instead, every effort was being made to carry more traffic, scrutinise operation, particularly in the case of unremunerative services, and improve efficiency and reduce expenditure.

The Department had continued to exercise its rights under the Transport Licensing Act in opposing the granting of road licences where the railways could provide adequate service. It was noticeable in this connection that public opinion was changing from the belief that the railways enjoyed unfair protection to a realisation of the true position, and the necessity for protective legislation for the differential rating system vital to the railways but making them vulnerable to road competition.

The principal financial and other results of the year's working are given below:—

	1956-57	1957-58
	Millions	
Passenger journeys	25·39	24·82
Goods tonnage	9·70	9·71
Total train-miles (revenue)	15·10	14·83
	£ millions	
Coaching traffic earnings	3·43	3·44
Goods traffic earnings	24·43	25·85
Total revenue	32·77	34·44
Expenditure	33·03	35·59
Net revenue or loss	− 0·26	− 1·15
Interest charges	4·65	4·87

Actually, the deficit on working rose by £876,054, gross revenue increasing by £1,677,433 but gross expenditure rose by ££2,553,487.

During the year under review 10 1,425-h.p. diesel-electric locomotives were imported from Australia and placed in service in the North Island. Six 250-h.p. diesel shunters also entered traffic in the South Island, so that on March 31, 1958, there were 107 main-line diesel and 86 diesel shunting locomotives in commission. In the North Island 48 per cent of the gross ton-miles were diesel-hauled.

Most of the route-mileage of line added during the year, 49½ miles, was accounted for by the opening of the Kawerau-Marupara section on July 1, 1957, 36¼ miles. However 1¼ miles were closed, leaving a route-mileage of 3,465½ miles owned and worked on March 31, 1958. The most important capital works in hand were a new marshalling yard at Westfield in the Auckland area, the Milson deviation at Palmerston North, the first seven miles being well advanced, a new bridge over the Waimakariri River, the new station at Christchurch, and extension of North Island main-line loops to accommodate the longer diesel-worked trains. The Auckland-Frankton doubling continued. Automatic warning devices were installed at 29 additional level crossings during the year, bringing the total number up to 274. A feature of the year was the remarkable number of floods, placing a considerable strain on the railway staff.

Letters to the Editor

(*The Editor is not responsible for opinions of correspondents*)

Twenty-Four Hour System for Timetables

October 4

SIR,—Introduction of the 24-hr. system in British timetables is long overdue. I wished to take a party of boys on a day trip to Sheffield, and received from the British Railways Party Travel Office concerned a telephone call giving me train times, including 8.5 p.m. from Sheffield back to Liverpool. Consultation of a timetable showed this train to be non-existent; the latest practicable departure times were 6.55 p.m. from Sheffield Midland or 7.27 from Victoria. The excuse made was the a.m. times had been looked at instead of the p.m.

Who with any experience of reading timetables would look at the beginning of the columns for a train late in the evening? If responsible British Railways staff cannot read their own timetables, what chance is there for the average member of the public?

Yours faithfully,

J. H. LYNAN

Hillfoot Hey High School, Woolton, Liverpool

THE SCRAP HEAP

Railway Stockholders

The Pennsylvania Railroad has 144,509 stockholders, more than any other railway company in the U.S.A., and, presumably, in the world. They are located in every State of the Union and in 38 foreign countries. At the end of 1930, there were 298,182 stockholders of the London Midland & Scottish Railway Company, and the number is estimated to have exceeded 300,000 on nationalisation in 1948.

Jubilee of New Zealand Trunk Line

The driving of the last spike on the North Island Main Trunk line of the New Zealand Government Railways in 1908 is to be recalled at a short ceremony at Ohakune on November 6. The Minister of Railways, Mr. M. Moohan, will unveil a plaque at Ohakune Railway Station commemorating the event. For a considerable period before construction was finished, Ohakune was construction headquarters for the Public Works Department and was a railhead of some importance. It is also near the site on which the last spike was driven in 1908 by Sir Joseph Ward, then Prime Minister.

Railway Builders' Tact

In a letter to *Country Life* a correspondent draws attention to the coat-of-arms of Lord Braybrooke shown in the accompanying illustration on the south entrance of Audley End Tunnel, on the Liverpool Street to Cambridge main line of the Great Eastern Line of British Railways, Eastern Region. The tunnel was built by the Eastern Counties Railway and the line was opened in 1845. It runs through the Braybrooke estate. The landowner's arms were added presumably to take cognizance of his position, and to overcome possible hostility to constructing a railway through the land. Round the moulding, barely visible in the illustration, are the Tudor rose and portcullis. The same correspondent remarks also on the passenger station (now closed) at Wansford, junction of the lines of the former L.N.W.R. from Peterborough to Rugby and Northampton. The Elizabethan design was intended to agree with the classical Elizabethan splendours of nearby Burghley House, seat of the Marquess of Exeter.

In the Andes

(*See our August 22 issue*)

Lest readers imagine that the locomotives of the Central Railway of Peru are of George Stephenson vintage with high funnels and that they are driven by engine drivers wearing long stovepipe top hats, with an Indian mounted on a llama riding ahead—a bunch of *quipús* in one hand and a red flag in the other—I append the facts.

The locomotives hauling their loads over the . . . 1 in 25 gradients of the mountain section are British-built Consolidation class, oil-burning, steam locomotives, squat and powerful. They are beautifully adapted to the sharp curves and terrible country they have to traverse. They date from 1935 to 1953—scarcely a qualifying age for the London-Brighton Veteran Car Rally.—*From a letter to "The Times."*

[The locomotives were built by Beyer, Peacock & Co. Ltd.—ED., *R.G.*]

Trans-Saharan Project (1898)

A well-known economist, writing in a French magazine, insists upon the immediate necessity for the construction of a railway line across the Sahara and the unification of the French African possessions. While admitting the heroism of efforts which have resulted in further penetration of the Dark Continent from west to east, he declares this is economically wrong, and that even strategically France should at once start on the construction of the Sahara railway. He estimates the cost at 180 million francs and the time required for its construction at seven to eight years. Its success as a money-making concern is certain, he says, and what is more, it would give France a controlling position in Africa by enabling her to move large bodies of troops to any given point quickly.—*From "The Financial Times" of September 30, 1898.*

[The Trans-Saharan line is being constructed, slowly, but purely as an economic measure.—ED., *R.G.*]

Open Carriage Excursion

While breaking up an old piano recently I discovered a railway ticket dated August 1, 1853. It is a day excursion from Waterloo to Southampton, "open carriages," price 4s. 6d.—*From a letter to "The Sketch."*

Heavy Rails

According to the returns of the Interstate Commerce Commission, there are 4,131 miles of Class 1 railway in the U.S.A. laid with rail weighing 140 lb. or over. The Baltimore & Ohio Railroad has about 3½ miles laid with 159-lb. rail, and the Reading Company has 0·1 mile of the same weight. Last year the Pennsylvania Railroad laid 536 miles with 155-lb. rail, which is now the standard replacement for the former 152-lb. section.

Autres Temps . . .

When our railways are quite modern,
As befits the day and age,
Let us hope that some historian
Will devote at least a page
To the pleasant little customs
Which prevailed in auld lang syne,
Ere the tidal wave of progress
Seethed and surged along the line.

I recall a one-armed porter,
Years ago, at Vauxhall Station,
Who could give even old Stentor
Lessons in vociferation.
He would reel off names of stations
With such vigour, verve and unction
That the sound, weather permitting,
Reached almost to Clapham Junction.

I recall the luncheon-baskets,
Signs of affluence on the train,
And the footwarmers and so forth,
Source of many a burn and blain.
If the smoke that rose to heaven
Sometimes had a tasty smell,
Was it really so much worse than
Modern monoxidal hell?

Life is earnest; ruthless progress
Dominates the modern scene,
But I have my quiet corner,
Where I keep my memories green.

A. B.

South portal of Audley End Tunnel, showing the arms of Lord Braybrooke and the Tudor rose and crown

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

INDIA

Station Bookstalls

In reply to a Parliamentary question the Deputy Minister of Railways, Mr. Shah Nawaz Khan, stated recently that there was no proposal for the railways to own or manage station bookstalls. There were, he said, 367 stations throughout the country which had bookstalls. Of these Wheeler & Company managed the bookstalls on 240 stations.

Pandu-Amingaon Train Ferry

A target of 300 wagons daily each way for crossing on the Pandu-Amingaon ferry has been set up. On June 10, 1958, wagons ferried between Pandu and Amingaon totalled 326 in the up direction and 292 in the down—a record since the war, when on several occasions more than 1,000 wagons each way per day were ferried over, using more ferry flats and berths than now.

On the south bank of the Brahmaputra there has also been a steady increase in the daily average of wagons moved by the North-East Frontier Railway. On the Pandu-Lumding section the increase during the first six months of the year has been 31·9 per cent compared with 1956. The increase on the Hill Section between Lumding and Badarpur during the same period has been 17·6 per cent in the up and 32·4 per cent in the down direction.

Third Class in "Deccan Queen"

The "Deccan Queen" of the Central Railway is allowed, in the current timetable, 3 hr. 10 min. southbound and 3 hr. 5 min. northbound between Bombay Victoria and Poona, over the 120 miles which includes the Ghat section. These times are longer than before the last war when the fastest northbound timing was 2 hr. 43 min. The train today is somewhat heavier and conveys third class passengers. It has been electrically hauled since its inception. The accompanying illustration shows the "Deccan Queen" on the Ghat section, hauled by an English Electric 3,600-h.p. Co-Co locomotive. The line is electrified at 1,500 V. d.c.

Railway Dispensaries

There are now 452 full-time dispensaries to provide medical facilities to railway employees throughout the country. Of these, 57 are on the Central, 46 on the Eastern, 91 on the Northern, 28 on the North Eastern, 49 on the North-East Frontier, 69 on the Southern, 46 on the South Eastern, and 66 on the Western Railway. The total number of beds is 475; not all the dispensaries have beds.

NEW SOUTH WALES

Electrification from Clyde to Carlingford

The four-mile branch line from Clyde on the Western main-line to Carlingford serves a rapidly-expanding residential area, and existing steam or diesel railcar services are to be replaced by electrification, expected to be completed by December, 1959. At first working will be provided by four-coach shuttle trains; the 1,500-V. d.c. supply will be drawn from the main line without any additional sub-station. It is expected that the main line electrification also will be completed by December, 1959.

RHODESIA

Aerial Photography in Survey Work

The development of Salisbury has been rapid, and the railway civil engineers have a major problem in bringing plans of the area up to date. Aerial photography has enabled the survey work to be completed in six months, instead of several years by survey on the ground.

Rhodesia Railways now has accurate 1 in. to 100 ft. plans covering 6¾ square miles between Msasa and Lytton. By rail, these two places are more than 10 miles apart. Contours are shown at 5 ft. intervals.

The seven plans that have been produced are each 14 ft. 6 in. long and 30 in. wide. From this 101½ ft. of original plans, a series of 42 tracings is being prepared, so that at any time prints of convenient size will be available.

For some time the railway management has been studying future traffic-handling facilities for the highly-developed area between Msasa and Lytton, so that the survey will be useful for this purpose as well as for current needs of the Chief Engineer's Department.

C.T.C. on North Line

C.T.C. has been extended to cover a further six sidings from Sawmills to Nyamandhlovu on the North line. This means that the section from Wankie to Nyamandhlovu (about 175 miles) is controlled by two panels situated at Dett and Sawmills. Work is now proceeding on the installation of C.T.C. from Nyamandhlovu to Mpopoma, Bulawayo.

Although work is being pushed ahead rapidly on installation of C.T.C. on the North line, the last section to be opened was that between Gwaai and Sawmills in November. The section between Nyamandhlovu and Mpopoma, which will be brought into use later, will be carrier-controlled. Control codes and indication codes can be despatched simultaneously to the Sawmills-Nyamandhlovu, and Nyamandhlovu-Mpopoma East sections, so accelerating train working.

English Electric 3,600-h.p. locomotive hauling the "Deccan Queen" on the Ghat section of the Central Railway Bombay—Poona (—Madras) main line

CANADA

P.G.E. Not for Sale

The Premier of British Columbia, Mr. W. A. C. Bennett, has stated that now that the Pacific Great Eastern Railway has been completed to Fort St John, it will be self-supporting within a year, and his Government has no intention of selling it. The Government of the Province has received offers from American railway companies, but has refused them.

Substantial receipts are expected next year from transport over the P.G.E.R. of loaded lorries from the U.S.A. carried on flat wagons *en route* for the Alaska Highway

UNITED STATES

Unifying Chicago Stations

A further plan has now been made public for the consolidation into two Union terminals of the present six passenger termini in the city of Chicago. This is proposed by the Chicago City Planning Department, and is formulated

as part of a scheme which would take 22 years to carry out in full and cost a total of $1,500,000,000.

The plan envisages the concentration of the service now provided by the La Salle Street, Dearborn, Grand Central, and Illinois Central stations in the area occupied by the present Union Terminal and the North Western Station. The former would be converted into a through station, and its tracks would be connected with those of the North Western station. Illinois Central trackage along the lake front would be continued.

The entire plan proposed includes the development of the Union-North Western station area into a transport centre, which would also include an air terminal, a "heliport," a bus terminal, and car parking facilities.

BRAZIL

New Works on Central Railway

The six-and-a-half-mile Salto deviation between Engenheiro Passos and Queluz has been inaugurated in September. It shortens the Rio-Sao Paulo distance by four miles. Two reinforced-concrete bridges, 194 and 492 ft. long, have been built, the gradient reduced, minimum curves increased from 9 to 34 ch. radius, and train speeds raised from 36 to 75 m.p.h.

Teresa Cristina Railway Prospects

Since the metre-gauge Teresa Cristina Railway, 160 miles long, which connects the Santa Catarina coal-fields with the port of Imbituba, has been incorporated in Rede Ferroviaria Federal, it has been allocated five additional locomotives and 120 wagons. The permanent way is being strengthened and repair shops re-equipped. The freight carried has increased from 70,000 to 128,000 tons a month this year.

The line is becoming increasingly important because of the growing demand for Santa Catarina coal. The expansion programme of the National Steelworks will call for large supplies in the near future; a coal-burning thermal electric plant has been set up near the mines; and a Presidential Bill, now before Congress, provides for building an important steel mill at Laguna, 20 miles from Imbituba.

PORTUGAL

Bridge Renewals

Good progress is reported on renewal of 80-year-old bridges on the Beira Alta line, between Pamphilosa and the Spanish frontier at Vilar Formosa, the route of the "Sud Express" between Paris, Bordeaux, the Franco-Spanish frontier at Hendaye/Irun, Salamanca, Coimbra and Lisbon.

FRANCE

Movement of 170-ft. Long Load

The S.N.C.F. recently moved by rail from Arles to Gravenchon-Port Jérôme, 700 miles, a 170-ft. catalytic cracking column of 5 ft. 8 in. dia. (10 ft. at the joint), weighing 80 *tonnes*. The load was placed on two eight-wheel bogies from a special-type wagon. A pivoting cradle was constructed on each bogie. The two bogies were linked by a temporary brake pipe. The special train consisted of a brake van, a flat wagon, the load on its bogies, a second flat wagon, and a vehicle for accompanying staff. Speed was limited to 25 m.p.h.

Wagon Control at Terminals

The S.N.C.F. are developing a scheme for the strict control of wagon movements internally at stations. Special offices are being established at the larger stations, which maintain a card index covering every wagon arriving at or leaving the station in question. On these cards all operations in respect of individual wagons are timed in detail, and the cards are so designed as to be capable of mechanical tabulations. The smaller stations are being grouped, and similar control is being established at centres, each of which is responsible for a number of stations. The office centres are being known as *fichiers wagons*, and it is intended ultimately that the scheme shall apply to the whole of the S.N.C.F.

AUSTRIA

Rapid Transit Line Through Vienna

Work is expected to start soon on conversion for rapid transit of the line from Floridsdorf to Meidling, with stations at Praterstern, Hauptzollamt, Südbahnhof, and Südtirolerplatz. The line is to be worked, it is understood, by multiple-unit diesel trains built by Simmering-Graz-Pauker.

HUNGARY

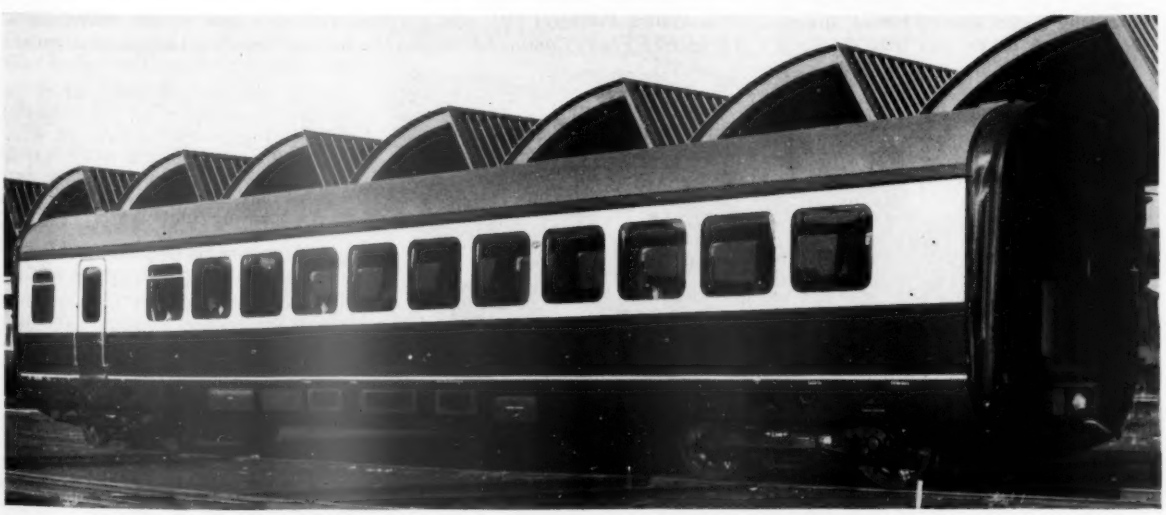
Reinforced Concrete Sleepers

A plant for production of reinforced concrete sleepers is being built at the Labatlan factory at a cost of 30 million forints (£1,000,000). Production is expected to cover one-third of the needs of the State Railways; the life of the sleepers is stated to be 50 years.

WESTERN GERMANY

Strengthening T.E.E. Sets

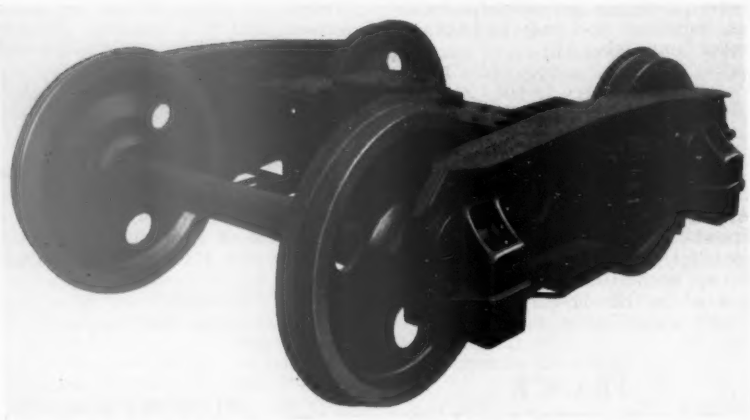
Though a number of the Trans-Europe Express services operated by the German 2,200 b.h.p. diesel-hydraulic trains are consistently lightly loaded, others take heavy traffic for at least part of their journeys; and to strengthen some of these formations five new air-conditioned trailer cars have just been supplied by Linke-Hofmann-Busch. Both open-saloon and compartment coaches have been built, of the standard VMd and VMc types as installed in the original formations of 1957.



One of five new 33-seat saloon trailers for German T.E.E. trains

Wagon Bearing Unit for British Railways

For use with new and existing bogies



British Railways 5-ft. 6-in. wagon bogie fitted with plain bearing axleboxes

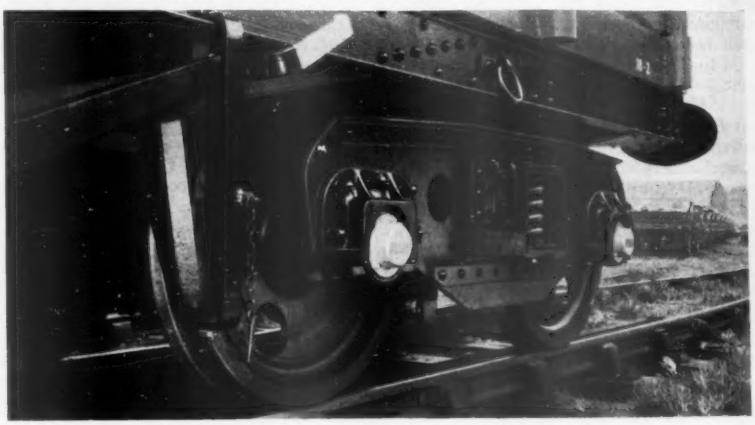
THE wagon bearing unit developed by British Timken Limited and used in conjunction with a horseshoe adaptor, was originally applied to British Railways four-wheel wagons equipped with conventional laminated spring suspension and axle guards. The scope of the application of the wagon bearing unit has recently been extended to include the British Railways standard 5-ft. 6-in. goods wagon bogie. This was originally developed at Swindon. It is shown in the illustration above, from which it will be seen that the side frame of the bogie consists of a rolled-steel plate member. The side frame member is cut away at the axles to receive a cast-iron plain bearing axlebox, which is bolted directly to the side frame member.

In a bogie equipped with roller bearings the wagon bearing unit is applied in a generally similar manner to that for the British Railways four-wheel wagons. The horseshoe adaptor is replaced by a steel casting bolted directly to the bogie frame and uses the same bolt holes as for plain bearing axleboxes.

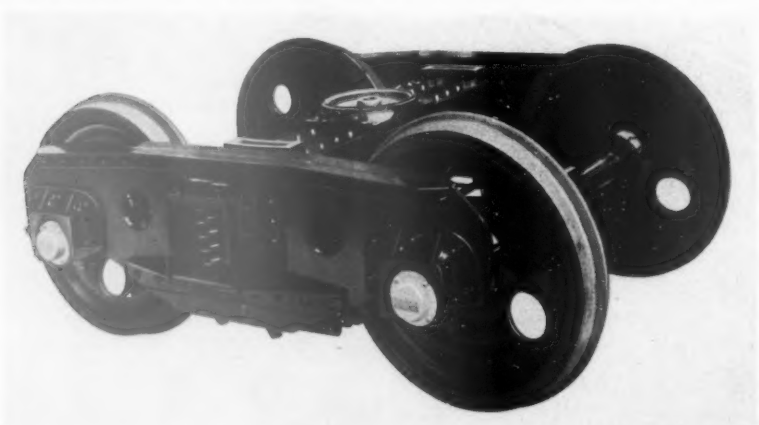
The wagon bearing unit housing has four flats machined on the outer surfaces, and the adaptor casting is designed to receive the wagon bearing unit. The two vertical guiding surfaces of the unit locate the unit in the adaptor casting. The top horizontal flat surface of the unit is in contact with the crowned inner surface of the adaptor casting, and allows free tilting of the wheelset without imposing loading on the bogie side frame. Lateral location of the wheelset is provided between the adaptor casting and the wagon bearing unit. The provision of four flats of the unit enables the wagon bearing unit to be turned in the housing after prolonged periods of service. The operation enables a new load zone on the roller bearings to be brought into use

Locking plates are bolted to the underside of the adaptor casting. They hold the wheelset in the bogie when the bogie is lifted as a unit. Removal of the locking plates allows the bogie to be lifted clear of the wheelsets as required, as in tyre turning.

The design of wagon bearing unit is suitable either for application to new bogies, as shown in the centre illustration, or to existing bogies in which conversion from plain to roller bearings will be progressively undertaken. Where conversion from plain to roller bearings is carried out, the existing plain bearing axles are turned down to receive the wagon bearing unit.



New British Railways 5-ft. 6-in. goods wagon bogie built by the Metropolitan-Cammell Railway Carriage & Wagon Co. Ltd. and fitted with wagon bearing units



Wagon bearing unit suitable for application to existing bogies

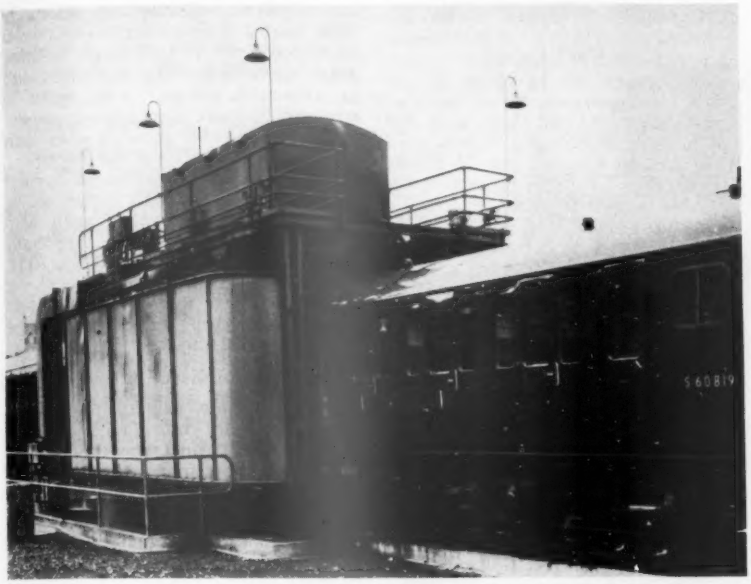
Components Interchangeable

Each unit consists of two Timken tapered roller bearings mounted in a cast or forged-steel housing. The high-capacity bearings and all other components, apart from the housing, are interchangeable with bearings and components incorporated in wagon bearing units already in service on British Railways four-wheel wagons.

This design was developed by British Timken in conjunction with the staff of the Carriage & Wagon Engineer, British Railways, Western Region.

Automatic Carriage Washing Plant at St. Leonards

Operation by passage of trains: economy in use of water



General view, showing water tank with supply and return pipes

ALTHOUGH two new mechanical carriage washing machines were installed in the Southern Region of British Railways at Ramsgate and Bournemouth West, at the end of 1956, the machine recently installed at St. Leonards West Marina incorporates several major improvements. Automatic operation enables trains to switch on the machine as they approach and switch it off as they leave. The plant is at the maintenance depot west of St. Leonards for servicing the Southern Region multiple-unit diesel-electric sets which operate on the London-Hastings via Tunbridge Wells line.

Automatic and Manual Control

When washing trains hauled or propelled by locomotives, the machine must be manually controlled so that it can be stopped while the locomotive itself passes through. When used for electric or diesel-electric multiple-unit trains, this is not necessary and so automatic switching, operated by the train itself, is possible. Both methods of control are provided at St. Leonards. For automatic working, the apparatus can be set for washing trains passing in either direction or in one direction only. This setting can be altered as required by the shunter at repeater stations situated at each approach to the machine. Near these, warning notices are illuminated when the machine is set for automatic working, to allow the driver to control the speed of the train accordingly.

The passage of the train is detected by two special high-frequency short track circuits, one at each approach. The sequence in which the relays associated with these track circuits are energised enables the direction of travel to be ascertained.

Structurally the machine is similar to those at Ramsgate and Bournemouth, with the addition of an overhead tank of 3,000 gal. capacity. The mechanism for, and the method of, washing the carriages also is similar; but the control and use of water have been improved to afford a saving of some 75 per cent compared with older machines.

After use the water is collected and passed through three metallic screens and finally through wood-wool filters to an underground sump of 1,000 gal. from which it is pumped, automatically by a sump pump, back to the overhead tank for re-use.

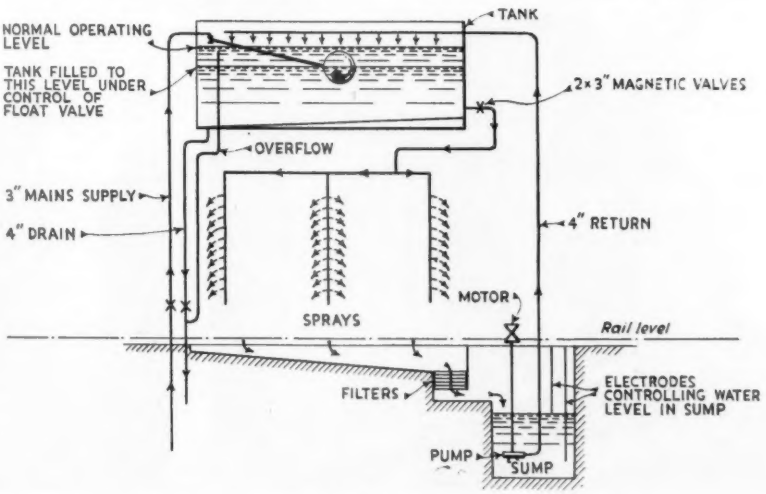
The screens and filters have an area of 48 sq. ft., made up of 12 separate units, each 2 ft. square, easily lifted out for cleaning, which is done over a special grid provided with a hose pipe. Two spare units are provided so that the machine is always ready for use. It has been found that the water so treated is sufficiently clean for the final rinsing operation which obviates the use of clean water from the mains and this gives the 75 per cent saving mentioned above.

Disposal of Dirt

Removal and disposal of the dirt collected in the screens and filters are much simplified, as they are now carried out frequently in small quantities by one man. In the older plants this work is left for a fortnight, when it becomes a major operation, usually for two men. The whole of the water is changed periodically according to local conditions, and the operation is so arranged that the overhead tank is automatically rinsed out at the same time. Another important advantage gained by this arrangement is that a failure of the water pump would not put the machine out of action, as the top tank can be filled direct from the mains while attention is being given to the pump.

The adjustable felt-carrying arrangements recently fitted to prewar plants, which gave a saving of 50 per cent in the cost of felts compared with the original design, have now been further developed in this machine. They promise to reduce the present cost by 50 per cent so that the costs of both felts and water are only about a quarter of those relating to the prewar designs.

The aluminium T-bars, which carry



Water system, showing method of filtering and return

Multiple-unit diesel train entering plant, showing pit for draining water to sump

the felts, are themselves carried in tee slots in cast-iron discs attached to the vertical shafts. It has been found that, because of the loose fit necessary to provide ease of fitting and removal, the ends of these bars are wearing rather quickly by abrasion. This has been effectively checked by coating a short length at each end with nylon. Some bars so treated have been in use for nearly a year without showing signs of wear. All the bars now in use eventually will be coated. This development in the use of plastics has many possible applications in engineering.

As only a single phase, 400-V. three-wire supply is available at St. Leonards West Marina, a Capacitor Ferraris Arno pilot motor providing a single to three phase conversion system is installed with an automatic starter. This starter is arranged to make a contact on completion of the starting sequence which then initiates the operation of the machine.

On previous machines the various services required, i.e., flail motor shafts, pump and rinsing water, were controlled separately. These are now arranged so that, for manual operation, switches pre-select the services and one push button sets them in motion. As before, one stop button brings the machine to rest and four buttons on the machine itself provide for emergency stops.

The eight 2-h.p. geared motors driving the shafts are controlled by an automatic contactor panel which starts them in pairs at short intervals to minimise starting currents. The two 3-in. magnetic valves, controlling the water supply to the spray pipes, are operated by a 180-V. d.c. supply from separate rectifiers.

Switchboard

The switchboard is arranged for three-phase connection at a later date. Red and yellow phase conductors of the four-core cable are used at 400 V. for power purposes and the blue phase and neutral conductors at 200 V. for lighting and heating. The total consumption for all purposes is registered by the meter on the board.

The switchboard enclosure also houses two transformers in the bottom. One is supplied from the lighting

Cleaning flails; (on right) pump for returning water

Flails rotating and water jets in action

circuit providing 50 V. for portable handlamps, and so on, in the control room. The other, supplied at 400 V. from a contactor in the control desk, provides 110 V. for the Signal Engineer's track circuits when the plant is set for automatic operation.

Two rectifiers are also housed in the switchboard, these provide the 180 V. d.c. required for the water valves on the plant.

Phase Conversion Equipment

This consists of an automatic contactor panel to start the slip ring pilot motor up from the single phase supply, using a capacitor. The motor is specially wound to produce a three-phase supply across the terminals. The third or artificial phase provided by the pilot motor will be approximately 400 V. to earth or to the mid-wire of the supply which is earthed. The contactor panel is adjusted to complete the starting operation in 4 sec.

The three-phase supply from the pilot motor starter is taken to the isolator of the flails and pump motor starter.

Flails and Pump Motor Starter

The eight flail motors are started in pairs. Each motor has its own overload coils, so that if one motor overload trips the contactor the opposite flail motor connected to the same contactor will also stop.

The time taken for the four flail contactors to operate can be adjusted by altering the position of the magnet in relation to the disc on the timing relay, in the panel. Time is adjusted for 6 sec. Overloads can be reset by the external levers provided on this panel. The second timing relay adjusts the time of operation of the pump star delta starter; this timing is not critical. The connections for the flail and pump motors are taken in one 30-core cable from this panel to the connection box on the plant.

Control Desk

A 400-V. supply is taken to the control desk terminals from the control fuses on the pilot motor starter; so that as soon as the main switches, the pilot motor isolator and the control desk isolator are switched on, these 400 V. are connected to the 400/50 V. transformer in the control desk which supplies all control circuits.

The "No Flote" control box on the left-hand side of the control desk is supplied from a terminal in the desk which is fed from a terminal connected to the artificial phase through the control fuse in the flail motor starter to ensure that this control is not energised until the pilot motor is running and a three-phase supply is available.

The pump will not normally start until the water level in the sump reaches the upper electrode and it will then continue pumping until the water level is reduced to the lower electrode.

A push button is provided to connect the two electrodes to start the pump if it is required to empty the sump when partly full of water.

When the selector switch is set to "automatic" and the "auto" button pressed, two relays, 1.R. and 8.R. are closed:—

Applications of 1.*R.*

(i) Applies the control voltage to the automatic relay circuits.
(ii) "Shorts out" the manual switch provided for shutting off the flail motors.
(iii) Ensures that the water valves are opened even if the water switch is "off." Under this condition the water valve will be opened by contacts (6 and 7) made by the final flail contactor.
(iv) Applies a hold on coil for the contactor.

8.*R. Applies:*—

(i) The voltage to the 400/110 V. transformer supplying the track circuits.
(ii) A contact (connecting 59 and 64) to ensure that under "automatic" conditions only, the pilot motor and pump will continue to run until the sump is empty when the rest of the plant is shut down.

A similar machine to this one at St. Leonards West Marina is now being prepared at Eastleigh Locomotive Works for the new depot at Grove Park, in the South Eastern Division, and is scheduled for erection on site later this year.

The plant was erected under the supervision of the Chief Mechanical & Electrical Engineer of the Region, Mr. W. J. A. Sykes.

The following firms supplied material:—

Geared motors	Brooks Motors Limited
Electrical control gear	Allen West & Co. Ltd.
Track circuit equipment	Westinghouse Brake & Signal Co. Ltd.
Polythene insulated multi-cored cables	Cable & Plastics Limited
Pilot motor	British Thomson-Houston Co. Ltd.
Sump pump	Associated Pumps Limited
Ball and roller bearings	Skefko Ball Bearing Co. Ltd.
Weld mesh flooring	Allan Kennedy & Co. Ltd.
Handrailing	Geo. H. Gascoigne Co. Ltd.
Magnetic valves	Magnetic Valve Co. Ltd.
Sluice valves	Newman Hender & Co. Ltd.
Aluminium-alloy tees	British Aluminium Co. Ltd.
Nylon coating on tees	Hydralon Limited
Fibreglass lagging	W. Gilmour Smith & Co. Ltd.

BRITISH INSTITUTE OF MANAGEMENT NATIONAL CONFERENCE.—The British Institute of Management National Conference will be held at Brighton from November 26 to 28, 1958. The theme will be "The Challenge of Change." Among the speakers will be Sir John Elliot, Chairman of London Transport, on the role of the top executive in a large organisation, and Sir Reginald Wilson, Member, B.T.C., and Chairman of the Eastern Area Board, on technical modernisation and new freight charges on British Railways.

LAUDER BRANCH CLOSED.—With the approval of the Transport Users' Consultative Committee for Scotland, the 10-mile branch line from Fountainhall to Lauder, in the Scottish Region of British Railways, was closed on October 1. Lauder Station, the public sidings at Oxton and Middleton, and the Ministry of Agriculture & Fisheries and Food Store siding at Lauder are closed to all traffic. Alternative rail facilities in respect of Lauder and Oxton are available at Earlston Station and the C. & D. arrangements for parcels and sundry goods traffic continue as before. In the case of Middleton public siding alternative rail facilities are available at Fountainhall Station. On the main line from Edinburgh Waverley to Carlisle via Galashiels. The passenger train service between Fountainhall and Lauder were withdrawn in 1932.

DIVERSION OF TRAINS FROM GLASGOW QUEEN STREET HIGH LEVEL STATION.—Because of engineering work on October 19 and 26, the 11.10 p.m. train from Glasgow Queen Street to Aberdeen and the 11.25 p.m. train to Inverness will leave from Buchanan Street Station instead of from Queen Street. On these dates all other trains which normally run to and from Queen Street High Level Station will arrive at and depart from Queen Street Low Level Station. This is believed to be one of the largest temporary adjustments in passenger working arranged in Glasgow in normal times.

RECOVERY IN STEEL PRODUCTION.—Output of steel in the United Kingdom is reported to have been considerably higher in September than in previous months, though such a rise is seasonal. The weekly average production of ingots and castings last month was 368,600 tons. This is 12 per cent below the corresponding figure for 1957, against the August total, which was 20 per cent below last year's figure for that month. The Iron & Steel Board has stated that the recent decline in steel deliveries consisted of deliveries both to the export trade and to certain sections of the home trade, more particularly to the capital goods industries. Deliveries to the consumer goods industries have been maintained.

USES FOR STRUCTURAL STEEL.—Mr. James Brown, President of the British Constructional Steelwork Association, has pointed out that delivery dates for steel in the United Kingdom are now shorter than when the Government encouraged the use of other constructional materials. The time needed for preparing and fabricating structural steel in the shops has been reduced and the performance of the steelwork has been improved. A wider range of sections is now available. One market for structural steel in this country, he states, is provided by the British Railways modernisation plan and electrification programme.

TOTE SYSTEM CONVENTION.—A convention of officers from the British Transport Commission and British Railways, organised by the Bulk Materials-Handling Division of Pressoturn Limited, was held at Stratford-on-Avon on October 14 and 15. Films and a series of practical demonstrations showed the Tote method of handling powdered, granular and liquid traffic.

Air-Conditioned Stock for Trans-Australian Railway

Comfort at high speeds and in frequently extreme ambient temperatures on rail link competing with air and sea routes

THE 4-ft. 8½-in. gauge Trans-Australian Railway, part of the Commonwealth Railways system, extends from Port Pirie Junction, in South Australia, to Kalgoorlie, in Western Australia, 1,108 miles. It provides the only railway connection between the Eastern and Western States of Australia. At Port Pirie it connects with the 5-ft. 3-in. gauge line of the South Australian Railway, which runs to Adelaide and the Victorian border (and connects with the Victorian Railway to Melbourne) and at Kalgoorlie with the 3-ft. 6-in. gauge line of the Western Australian Government Railway to Perth.

Providing Competitive Service

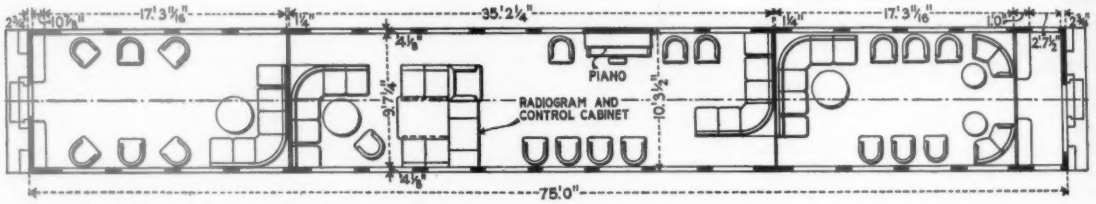
To counter intense sea and air competition and to take advantage of the speed and availability of the diesel-electric locomotives introduced in 1951, it was decided to obtain new passenger stock which could sustain high speeds and provide a high standard of comfort.

Tenders were submitted on behalf of manufacturers in the U.S.A., Italy, and Germany. The lowest offer received was from Wegmann & Company, of Kassel. The two complete nine-coach passenger trains constructed by Wegmann were placed in service in 1952. Since then an additional eight cars have been obtained from the same firm and placed in service. These are: one dining car, one lounge car, one first class sleeper and observation car, and five first class roomette type sleeping cars. In addition, two roomette cars have been provided by converting older passenger cars in the railway workshops at Port Augusta.

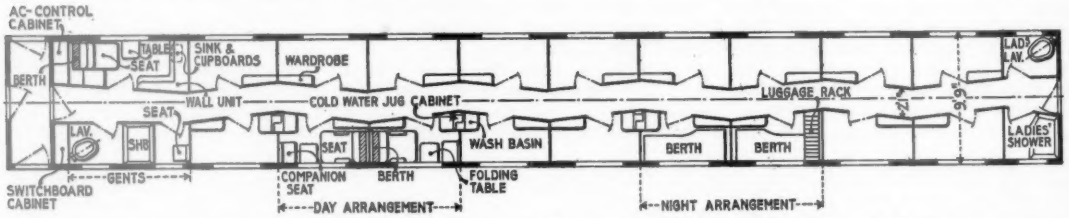
Leading dimensions of the vehicles built by Wegmann are as follow:—

Vehicle	Length over coupling points	Width over body panels	Height from rail to top of roof
	ft. in.	ft. in.	ft. in.
Power vans, first and second class sleeping cars	78 2	9 8	13 6
First class sleeping-observation cars and second class sleeping-lounge cars	85 2	9 8	13 6
First class lounge cars	78 2	10 3½	13 6
Dining cars	85 2	10 3½	13 6

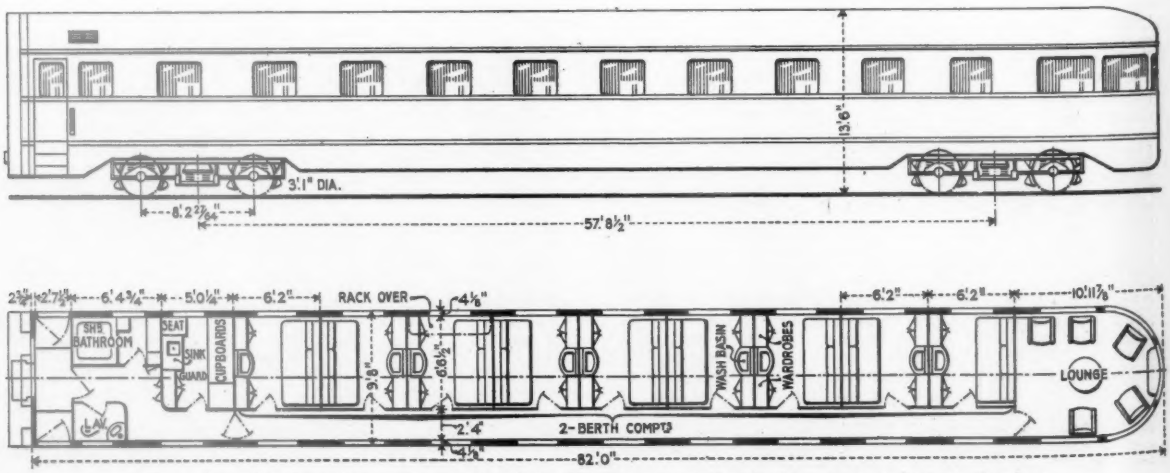
The weights of the cars vary from 39 tons for first class lounge to 49 tons for dining cars. The power van weighs 50 tons



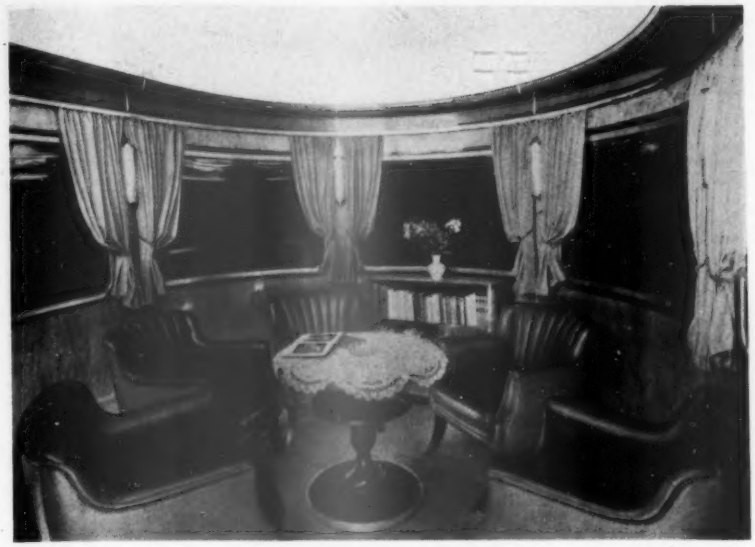
First class lounge car built by Wegmann & Company. Note dimensions of centre saloon and position of piano



Roomette car with zig-zag centre corridor, converted from older stock in Commonwealth Railways shops



First class sleeping-observation car built by Wegmann. Outside doors are at front end only



Observation lounge in first class sleeping car at rear end of train

The cars present a streamlined appearance for the full length of the train. The exterior colour scheme is maroon sides banded with silver below the window line, with aluminium roofs and black skirts. Construction is of the stressed skin, all-welded steel type, combining strength with lightness. The vehicles are heavily insulated in the roof, sides, and floor. Stone-Carrier air conditioning is installed.

In service, the 10-coach sets consist, in that order, of: one power-brake van, two second class sleeping cars, one combined second class sleeping lounge car, one dining car, one first class lounge car, two first class sleeping cars, one first class roomette car and one first class sleeping-observation car.

First Class Sleeping Cars

The ordinary first class sleeping cars each accommodate 18 passengers in nine two-berth compartments. In the second class cars, eight four-berth compartments are provided. Wash-basins with hot and cold water are in each compartment. A disappearing mirror over each basin is a unique feature. Hot and cold shower baths are provided in each coach.

Roomette Sleeping Car

For first class passengers, a roomette (or single berth) cabin car is included on each train. A feature of these cars is the staggered zig-zag centre corridor which allows more room. Additional space is thus provided in each cabin or compartment and passengers are able to move about and either dress or undress while the berth is down. Berths in these cars are vertically hinged to fold back into recesses in the cross partitions.

One first class observation sleeping car is also included in each train set. These cars whilst similar to the ordinary first class sleeping cars in the sleeping compartment section have a rounded observation section at the rear end.

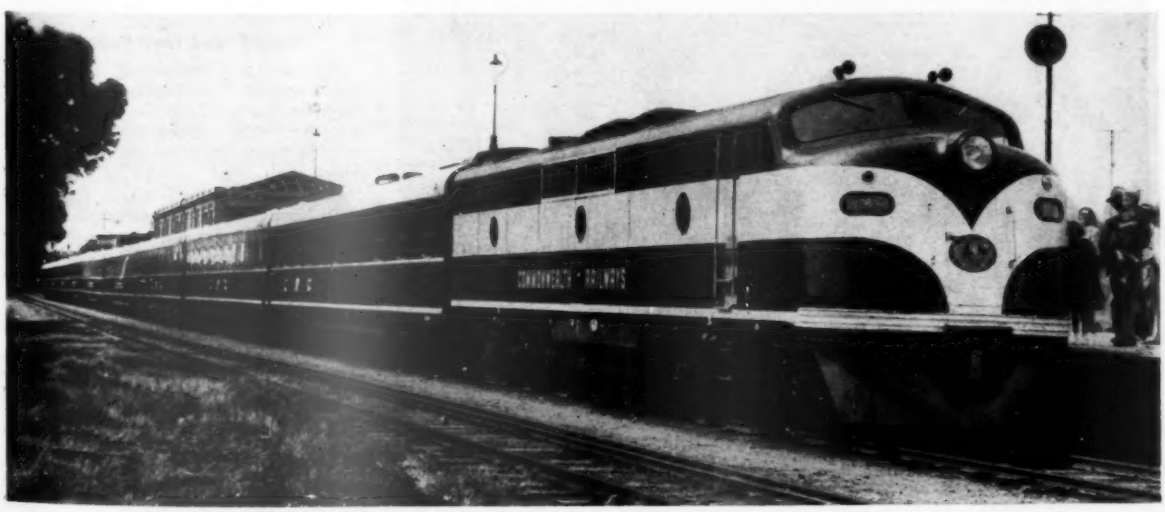
The power-brake vans have sleeping accommodation for 10 men of the train crew equal to the standard provided in the second class cars. There is a cool room compartment adequate for the storage of provisions required for the dining car. The coach also incorporates a guard's compartment provided with water cooler and electric heating stove. A baggage compartment and an engine room for the power units and main switchboards are also included in this vehicle.

Electric Power Equipment

Electric power for the lighting and heating generally, as also for the air conditioning of the train, is generated by the power plant situated in the power-brake van. The power is supplied by two 75-kW. diesel alternator units controlled by one central switchboard located in this compartment and distribution throughout the train is achieved by means of two three-phase 415-240 V., 50-cycle circuits; each of these circuits is capable of carrying the full electric train load and in the event of the power failure of one of the circuits continuity of supply for the operation of the equipment can be maintained over the other circuit, but normally both circuits are in use, the power being equally divided between them.

Air Conditioning

The temperature range along the Trans-Australian Railway varies widely, between – 30 deg. F. in winter and 120 deg. F. in the shade in summer, and complete air conditioning throughout the train has been provided. Each compartment in all vehicles receives its own quota of heated or cooled fresh air, fed through ceiling vents from a duct running the full length of the car. This air is drawn through filters from outside the car by fans driven by electric motors,



Train of air-conditioned stock at Port Augusta. The leading coach is the power-brake van

and, depending upon outside conditions, passes over cooling coils or heating strips before entering the duct. From the duct the air passes through Multivent ceiling panels into the compartment without causing any sensation of draught.

Each passenger has a reading light to which is attached a bell-push to summon the attendant; when the button is pressed, a small light fitting lights up in the corridor opposite the compartment, and at the same time a buzzer sounds in the attendant's compartment; he can stop this buzzer only by switching off the current at the indicator light fitting ouside the passenger's compartment. A similar arrangement is fitted in the lounge cars.

Sleeping compartments contain Thermos flasks. Each sleeping car has its own refrigerated drinking water font. Other facilities are points for electric razors, electric water urns, and electric irons and ironing boards.

Upholstery

Moquette is used in the first class compartments, and leather trimming in the second class compartments, second class lounge, first class smoking and observation lounge and the dining car seats. Carpets are provided in the first class compartments, dining, and lounge cars. Linoleum covers the floors of second class accommodation. Walls and partitions are covered in plywoods with veneers. First class compartments are panelled in Swedish birch, door and window frames are in teak, and the corridor in sapeli mahogany. Second class compartments are similarly treated.

Lounge Cars

The lounge cars for first class passengers are panelled. The covering veneer has been built up from the roots of elm trees, carefully matched. Partitions divide the lounge cars into three sections; a smoking compartment in which the seats are covered in red leather, a large centre music saloon containing the piano and radio-gramophone combination, the seats trimmed in moquette, and a ladies' lounge also trimmed in moquette. The windows in this car have inside drape curtains and each section has a carpet to tone with the soft furnishings. On the panels of the partitions are examples of inlay veneer.

Dining saloon seating 48, with folding seats and tables, and dwarf partitions

Dining Cars

The dining car saloon accommodates 48 passengers at one sitting, and is fully air-conditioned. All tables are covered with durable material and fold back to the wall during cleaning, the chairs are in a fixed position but the seat can be folded to allow the window seat diner easy access; a dwarf partition separates every second set of seats. Kitchen equipment includes ample refrigerator and iced storage space. Stainless steel has been liberally used for food preparation benches and sinks.

All cars are fitted with double-glazed sealed windows. Venetian blinds are hung in the space between the two panes of glass, and operated by a small handle on the wall near the top of the window. The compartments in all cars are fitted with small loudspeakers, each with its own volume control, to enable the train attendants to make announcements from a central position for the information of passengers; musical and radio programmes from the lounge car are also relayed.

Indirect trough ceiling lights are fitted besides individual wall brackets in lounge and dining cars. Reading lights are fitted over all seats, and over mirrors and wash basins. The corridors can be lit by overhead direct lighting or low intensity floor level lights to avoid glare from direct lighting disturbing passengers and for night use a blue light is combined with the ceiling fixture.

A section of first class lounge car, showing elm veneer on partition

Sound- and Dust-Proofing

All cars are completely sound- and dust-proofed, including the space between cars, which is fully enclosed with an outer rubber diaphragm. All outside doors are fitted along the bottom edges with small concealed brooms to sweep out any dust which may have been brought in by passengers.

The bogies were built by Westwaggonfabrik. They are of the all welded four-wheel, individually sprung, single bolster type, with roller-bearing axleboxes. The bogie frame is supported on each side of the axlebox on coil and rubber springs. The wheel and axle assemblies are confined to their position by flexible and adjustable tie bars, the usual type of axlebox guide being dispensed with; horizontal oscillation is controlled by shock absorbers in a horizontal position at each end of the bolster, controlling side motion and a proportion of the vertical movement of the bolster.

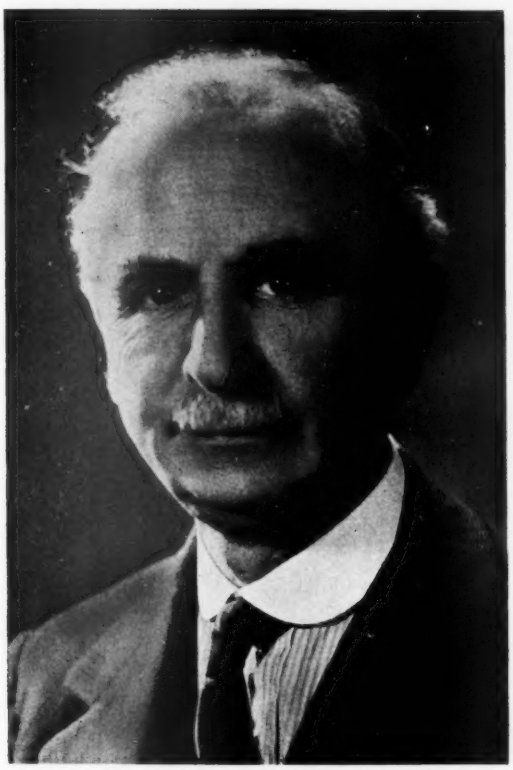
RAILWAY NEWS SECTION

PERSONAL

Mr. S. K. Mukerji, formerly Chief Commercial Superintendent, Southern Railway of India, has been appointed a member of the Indian Railway Rates Tribunal.

Mr. A. E. Robson, M.B.E., M.I.Mech.E., Chief Carriage & Wagon Engineering Officer, British Railways Central Staff, who, as recorded in our August 29 issue, has been appointed Chief Mechanical & Electrical Engineer, London Midland Region, served a privileged apprenticeship in the Carriage & Wagon Works, Derby, on the former London Midland & Scottish Railway, from 1925 to 1930. After several years drawing office and general works experience, he was appointed Progress Assistant to the Works Superintendent in 1936. The L.M.S. Railway undertook, in 1938, to produce aircraft components at Derby, and Mr. Robson was put in charge of the project. In 1942 he was appointed Assistant Works Superintendent, Derby Carriage & Wagon Works, retaining direct responsibility for the extensive aircraft production and repair work then being carried out. For his work in this field, he was made an M.B.E. in 1945. In that year, he was appointed Assistant Locomotive Works Superintendent, Derby, and in 1946, became Locomotive Works Superintendent. In 1948 he was made Principal Assistant (Carriage & Wagon) to the Chief Mechanical Engineer, Derby, and, in 1949, was appointed to the newly-created position of Carriage & Wagon Engineer (E. & N.E. Regions), Doncaster. In 1953 Mr. Robson was appointed Acting Chief Officer (Carriage & Wagon Construction & Maintenance), Railway Executive, and became Chief Carriage & Wagon Engineering Officer, British Railways Central Staff, in January 1955, the position he now vacates.

Mr. A. E. Robson
Appointed Chief Mechanical & Electrical Engineer, L.M. Region



The late Major Malcolm Speir
Chief Officer for Scotland, L.M.S. Railway, 1941-47

Sir John Benstead, Deputy Chairman, British Transport Commission, has accepted the Presidency of the Railway Benevolent Institution for the year 1959. Mr. C. P. Hopkins, General Manager, Southern Region, British Railways, has accepted the Chairmanship of the Institution for a further year.

The following have been appointed members of the Ulster Transport Authority:—Mr. G. B. Howden, Mr. A. G. Algeo, Sir Walter Edmenson, Sir Dudley M'Corkell, Mr. T. G. M'Laughlin, Mr. G. H. Porter, Mr. J. S. Rogers, Mr. A. E. Swain, Mr. James Walker, and Mr. William Wilson. The members will hold office for a period of three years from October 1, 1958.

The following have been appointed members of the Great Northern Railway Board:—Mr. G. B. Howden, Mr. A. G. Algeo, Mr. J A. Clarke, Mr. W. H. Duncan, and Mr. G. H. Porter. These members will hold office from October 1, 1958, until the date appointed for the dissolution of the Board.

We regret to record the death, on October 12, of Major Malcolm Scott Speir, M.C., J.P., formerly Chief Officer for Scotland, London Midland & Scottish Railway. Major Speir entered the service of the Midland Railway in 1905. After serving in the Traffic Department, where he became a Headquarters Inspector, he went to America in 1909 to study railway methods there. He returned in 1910, and joined the Caledonian Railway as Assistant Outdoor Mineral Superintendent, becoming Outdoor Assistant General Superintendent in 1912. He served throughout the 1914-18 war with the Royal Engineers. On three occasions he was mentioned in dispatches, and he was awarded the Military Cross for gallantry on the Western Front. Major Speir returned to the Caledonian Railway in 1919, and on the formation of the L.M.S.R. in 1923, was made Assistant to the General Superintendent for the Northern Division. In August, 1924, he was appointed Assistant General Superintendent, Northern Division. He became Manager & Secretary of the Northern Counties Committee, L.M.S.R., in 1931, and in April, 1941, was appointed Chief Officer for Scotland, the position from which he retired in 1947. Major Speir was Hon. Sheriff Substitute, Stirling.

Mr. Joshua Bradley, Assistant Chief Mechanical Engineer, Western Australian Government Railways, who, as recorded in our August 22 issue, has been appointed Chief Mechanical Engineer, is 61 years of age. Mr. Bradley was born and educated in England, and after serving an apprenticeship with the Vulcan Foundry Limited, he joined the Royal Air Force during the 1914-18 war. He spent 10 years as Planning Engineer with Sir W. G. Armstrong Whitworth & Co. Ltd., and in 1928, was appointed Production Engineer, Madras & Southern Mahratta Railway. He served in a number of positions on that railway, before being appointed Chief Mechanical Engineer in 1948. He resigned in 1949, owing to changed political conditions, and returned to England. For some years before leaving India he was a Member of the All India Railway Standards Committee, dealing with new designs of rolling stock, and modifications thereto. In 1950 he became Assistant Chief Mechanical Engineer, Western Australian Government Railways. From 1942 to 1946, Mr. Bradley held the rank of Major, Royal Indian Engineers, and was in charge of all air raid precautions.

Mr. J. Bradley

Appointed Chief Mechanical Engineer, Western Australian Government Railways

Mr. C. Robinson

Appointed Chief Finance & Executive Officer, Western Australian Government Railways

Capt. G. D. Walker, Senior Master of British Railways Dover-Folkestone fleet, has retired, after almost 40 years with the fleet.

Mr. R. E. Huffam, a director of Unilever Limited, has been elected President of the British Standards Institution. He is also Chairman of the Institution's General Council. Mr. Geoffrey Cunliffe, Deputy Chairman & Managing Director of the main companies in the British Aluminium Group, has been elected to succeed Mr. Huffam as Chairman of the Institution's Finance Committee.

Mr. W. S. Cutler, Secretary, Railway Clearing House, presided at a recent luncheon to mark the retirement of Mr. H. B. Taylor, Assistant Operating Superintendent, Southern Region, British Railways. Among those present were Mr. A. C. B. Pickford, Assistant General Manager (Traffic), Western Region; Mr. H. F. Pallant, Chief Operating Officer, British Transport Commission; Mr. E. J. Vipond, Operating Officer, British Transport Commission; Mr. R. L. E. Lawrence, Traffic Manager (London), London Midland Region; Messrs. L. B. Marson, S. S. Hirst and A. H. J. Turner, British Transport Commission; H. Hoyle, E. R., W. O. Reynolds, London Midland Region, W. A. Bridge, Railway Clearing House, and G. Lymer, formerly Chief Controller, F.R.S.

Mr. T. Austin, Chief Engineer of the Siemens & General Electric Railway Signal Co. Ltd. since 1930, is retiring. Mr. Austin joined the Railway Signalling Department of G.E.C. in 1920. He is a Past-President of the Institution of Railway Signal Engineers.

Mr. R. C. Odams has been appointed to the Board of Constructors John Brown Limited, as Engineering Director and will take up his appointment on October 24.

Mr. C. Robinson, who, as recorded in our August 22 issue, recently was appointed Chief Finance & Executive Officer of the Western Australian Government Railways, began his railway career in the Civil Engineering Branch. Mr. Robinson served as Engineering Assistant at Kalgoorlie, Narrogin, Bunbury and Perth. Later, as Assistant Engineer at Perth, he became responsible for leases, private sidings, contracts and agreements. In 1949 he took over the Assets Section of the Secretary's Branch, where he has since remained, with the altered title of Officer-in-Charge, Works. Mr. Robinson's latest appointment is a newly-created position. His duties will be to assist the Commissioner of Railways and to watch the financial side of the Railway Department.

Mr. James Mitchell will resign from the board of Stewarts and Lloyds Limited, from October 31.

Mr. M. A. Derbyshire, District Road Motor Engineer, Blackburn, London Midland Region, British Railways, has been appointed Road Motor Engineer, London District. Mr. Derbyshire joined the Road Motor Engineer's Department, L.M.S. Railway in Manchester in 1930. After experience in workshop supervisory positions in Birmingham and London, he became District Foreman, London, in 1938, and Assistant District Road Engineer there in 1949. Subsequently, Mr. Derbyshire was appointed District Road Motor Engineer, Blackburn, the position he now vacates.

Mr. A. T. Gosden

Regional Pensions Officer, L.M. Region, 1954-58

Mr. A. T. Gosden, Regional Pensions Officer, London Midland Region, British Railways, who, as recorded in our October 10 issue, is retiring, began his career with the former London & North Western Railway at Euston in 1913. After a year in the Audit Office Mr. Gosden was transferred to the Superannuation Fund Section, Chief Accountant's Department. He served in an R.A.M.C. Field Ambulance Unit during the 1914-18 war, was wounded, and invalided out in 1919. On return to the railways, he gained experience in all phases of Superannuation and Pension Fund administration, and was appointed Chief Clerk in 1946. He became Assistant for Funds to the Regional Establishment & Staff Officer in 1950, and Pensions Officer, London Midland Region, for the newly formed B.T.C. Male Wages Grades Scheme in 1954. He was Secretary of the L.M.S. Superannuation Fund, L. & N.W. Widows & Orphans Society and six other pension and friendly societies. Mr. Gosden is a member of the Trustee Board of the Railway Convalescent Homes, Chairman of its Finance Committee, and a Trustee of the L.M.S. Hospital Fund.

Mr. P. C. Cooper, Assistant, General, to the Midland Divisional Motive Power Superintendent, Derby, London Midland Region, British Railways, has been appointed Assistant Line Traffic Officer (Motive Power), Derby.

Mr. J. I. McGillivray has been appointed a Principal Executive Assistant, London Transport Executive, and will be responsible to the Estate Agent & Rating Surveyor for the work connected with Town and Country Planning, Rating, Acquisitions and Sales. Mr. McGillivray, who is 42 years of age, joined the department of the Estate Agent & Rating Surveyor in 1937. He holds the degree of B.Sc. (Estate Management) and is an Associate of both the Royal Institution of Chartered Surveyors and the Chartered Auctioneers' & Estate Agents' Institute. During the war he served with the Royal Engineers (Transportation Branch) attaining the rank of Captain.

Lord Aberconway has resigned from the board of Renold Chains Limited.

Mr. F. L. Howard, District Motive Power Superintendent, Ashford, Southern Region, British Railways, has retired.

Mr. R. J. Gresley has been appointed Chief Engineer, Power & Distribution Transformer Division, the Gresham Transformer Group.

We regret to record the death of Mr. D. L. Irwin, Chairman of the Ruberoid Co. Ltd., He had been a member of the company since it was founded in 1906.

Mr. H. Gibbons has been appointed Chief Engineer, Eddison Plant Limited. He succeeds Mr. J. W. Womar, who has been appointed Chief Engineer, Potteries Motor Traction Co. Ltd.

Mr. Robert H. Dibb, Engineering Director of Imperial Chemical Industries' Plastics Division, has been appointed Engineering Controller of I.C.I. He succeeds Mr. J. E. Braham, who has retired from the company.

Mr. H. E. Cooper, Deputy Managing Director, G. A. Harvey & Co. (London) Ltd., has been appointed Managing Director. Mr. I. A. Marriott succeeds Mr. P. T. Bliss as Sales Director. Mr. Bliss retires on December 31 after 50 years' service.

Following the appointment of Mr. W. E. Ward as a Director & General Manager of the Consett Iron Co. Ltd, Mr. S. C. Pearson has been appointed Assistant General Manager and Mr. G. F. Ewan General Works Manager (Production).

Mr. I. F. Fisher has been appointed General Works Manager, British Timken Limited, and will be responsible for the management of the company's Duston and Daventry factories. Mr. S. H. Jakeman has been appointed Works Manager at Duston.

Mr. F. McD. Hall has been appointed to the board of Wolf Electric Tools (Holdings) Limited. Mr. Robert G. J. Nisbet, Mr. Neil McCann, Mr. John A. Jackson, and Mr. Walter N. Scottor have been appointed to the board of the operating company, Wolf Electric Tools Limited. Mr. R. F. Hatto has retired from the boards of both companies.

We regret to record the death, on October 10, of Mr. Robert Naef, Treasurer and Past President of the International Federation of Consulting Engineers. Mr. Naef, a prominent member of the Swiss Association of Consulting Engineers & Architects, died in England as the result of a motor accident. He was visiting this country and, two days previously, had read a paper to mark the 50th anniversary of the Institution of Structural Engineers.

A new company, Vickers-McKay Limited, has been formed by the McKay Machine Company of Youngstown, Ohio, U.S.A.; Vickers-Armstrongs (Engineers) Limited, and Rockwell Machine Tool Co. Ltd. It will manufacture in the United Kingdom a wide range of McKay machinery. The Directors of the company are: Mr. R. Wonfor (Chairman), Mr. W. M. Briggs, Mr. C. E. Rockwell, and Mr. A. J. Wardle, Junior. The registered office of the company will be at Vickers House, Broadway, Westminster, London, S.W.1.

The late Mr. S. H. Scholes

Assistant Regional Staff Officer, L.M. Region, 1949-51

We regret to record the death of Mr. S. H. Scholes, former Assistant Regional Staff Officer, London Midland Region, British Railways. Mr. Scholes began his career in the Liverpool District, and after station experience, joined the staff of the District Superintendent until he was transferred to London in 1915. Mr. Scholes joined the Army and served in Salonica, France and Italy. He was closely associated with the setting up of the Mediterranean line of communication between Cherbourg and Taranto. On returning to the railway, in 1919, he resumed staff work at Euston and subsequently was moved to Manchester and Derby, before his appointment as Assistant to the Superintendent of Organisation & Staff, Operating & Motive Power Departments, in 1934. In 1943 he became Assistant (General), Labour & Establishment Office, Euston, and was appointed Assistant Regional Staff Officer, London Midland Region, in 1949. During his career he has served on a number of important committees concerned with the improvement of the railway organisation, and closer working and pooling with other companies. Mr. Scholes retired in 1951.

The British Transport Commission announces the following appointments:—

British Railways Central Staff

Mr. E. S. Cox, Mechanical Engineer (Development), Mechanical Engineering Department, to be Assistant Chief Mechanical Engineer.

Finance Department

Mr. G. R. Skeates, Assistant, Area Management Costs & Statistics Panel Secretariat, Accounts & Statistics Division, to be Senior Accounts Assistant.

Mr. R. G. Smith, Senior Costings Officer, Traffic Costing Service, B.T.C. Headquarters, to be Principal Traffic Costing Officer, Liverpool Street.

Mr. W. F. Thomas, a member of the Victorian Railways Public Relations & Betterment Board, has been appointed Manager of the Victorian Government Tourist Bureau. He succeeds Mr. M. J. Harkins who has become Director of the new Tourist Development Authority. Mr. A. J. Petrie succeeds Mr. Thomas as Member, Public Relations & Betterment Board

NEW EQUIPMENT AND PROCESSES

Varnished Terylene Insulated Cables

A VARNISHED Terylene insulated power cable has been designed to meet the variety of service conditions above ground calling for special consideration, notably in wiring locomotives.

The cable can be supplied with braided or lead covering, and installed in air on a l.t. system, will operate continuously at a temperature of 130° C. This enables a reduced conductor size to be used when compared with most other types of cable, and, as the constructional thicknesses are normal, the overall diameter is correspondingly smaller and the cable is lighter. These features are stated to represent a distinct advantage where space is limited.

The cable is not suitable for underground use, and should not be used as an alternative to paper insulated cable.

Supply is to specification and delivery is about six weeks. Further details may be obtained from the manufacturer, Siemens Edison Swan Limited, 155 Charing Cross Road, London, W.C.2.

Resilient-Wick Lubricator

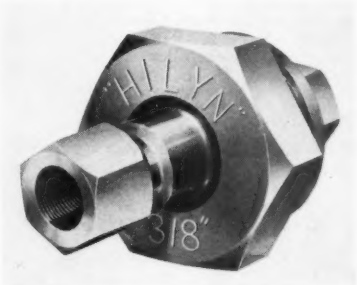
THE Cool-Pak lubricator for rolling stock is based on the principle of a resilient wick. This keeps wick surfaces in continuous contact with the journal through a temperature range from −60 deg. to 130 deg. F.

The pack consists of a double-layer felt base 2 in. thick, and of 110-180 wicks, depending on lubricator size. In the centre of each wick is a stranded stainless-steel 21-filament wire. The self lubricating wires hold the wicks against the journal by spring action. It is claimed that the device cannot be compressed and held away from the journal, even in extreme cold.

The wicks are made from a blend of nylon, wool, and cotton yarn, selected to provide optimum oil delivery, wick-rise rate, abrasion resistance, ageing properties and chemical stability. The makers state that their lubricators allow a journal to run as much as 17 per cent cooler than waste-packed journals. This is attributed to the relatively light pressure exerted by the pack on the journal. The looped wicking arrangement also provides a free air space which aids in dissipating journal heat.

Cool-Pak has been approved by the Association of American Railroads for test application.

Details may be obtained from the manufacturer, Uni-Pak Corporation, Box 8,302, Swissvale, Pittsburgh 18, Pa., U.S.A.



Self-Sealing Swivel Joint

THE Hilyn swivel joint has been designed to provide rotary movement in rigid pipework where the use of flexible hose is precluded because of the original design or of space restrictions. It is stated to be suitable for steam, water, and air, and for weed-killing units on railway track. The joint is self-sealing. Pre-tension is achieved by the internal pressure with additional support from a spring which ensures a completely pressure-tight joint at very low pressures.

Automatic adjustment of pipework misalignment is possible through 360 deg. with no restriction in flow. A 10-deg. angular or side movement is possible.

There are only five component parts. The joint is machined from B.S.S. gunmetal. It can be provided in aluminium or stainless steel alloys where gunmetal is not suitable, and in elbow or straight patterns from ¼-in. B.S.P. to 2-in. B.S.P.

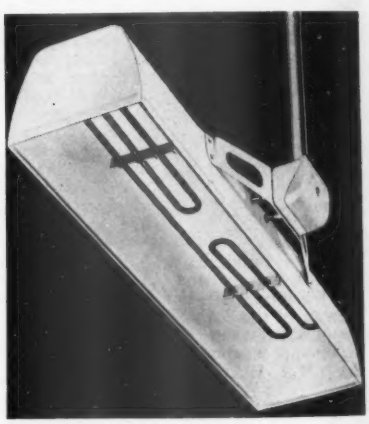
The maximum working pressure is 500 lb. per sq. in. and maximum working temperature, 485 deg. F. (250 deg. C.). Other designs are available for applications involving higher pressures and temperatures.

Further details may be obtained from the manufacturer, Hilyn Industrial Equipment Limited, Lockfield Avenue, Brimsdown, Enfield, Middlesex.

Weatherproof Space Heater

A WEATHERPROOF radiant space heater of 1½-kW. capacity is particularly suitable for repair shops, stores, and similar installations. It consists of anodised aluminium reflector, tubular metal sheathed heating element, stainless steel element supports, and a die-cast aluminium alloy weatherproof terminal box. The element ends have weatherproof seals with screwed terminals and are themselves sealed into the terminal box with silicone rubber bushes. The terminal box cover is secured by a single fixing screw.

The element has a robust tubular outer

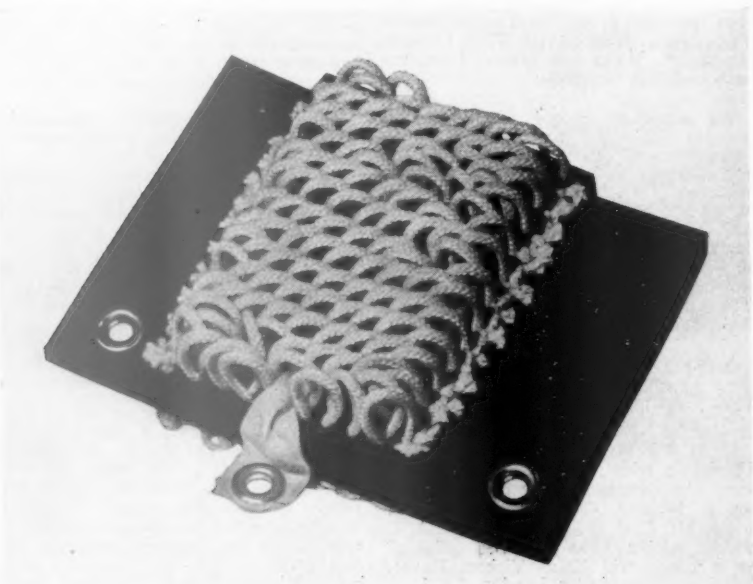


sheathing of non-corrodible alloy, enclosing the heating spiral, insulated from the sheath by highly compacted magnesium oxide. It is claimed that the element withstands rough handling, and, as the resistance spiral is protected from atmospheric corrosion, long life is ensured.

The light weight, 5 lb., enables the heater to be mounted from the terminal box by means of a single 1-in. dia. conduit. The unit may be earthed and a fixing bracket, enabling angular adjustment in one plane, is available.

For commercial installations both this unit and a similar 3-kW. model can be supplied with an ornamental bezel, enabling it to be built into the ceiling or suspended by conduit or chains.

Further details can be obtained from the manufacturer, Metropolitan-Vickers Electrical Co. Ltd., Trafford Park, Manchester 17.



Institution of Railway Signal Engineers Annual Dinner

Mr. John Ratter on the importance of keeping down the cost of signal equipment: signalling in the modernisation plan

The annual dinner and dance of the Institution of Railway Signal Engineers was held at the Connaught Rooms, London, on September 19. The chair was taken by the President, Mr. J. F. H. Tyler.

Mr. Tyler was supported by:—

Messrs. D. G. Shipp and W. Owen, Vice-Presidents; Messrs. A. W. Woodbridge, J. C. Kubale, E. G. Brentnall, J. H. Fraser, T. Austin, S. Williams, R. Dell, and F. L. Castle, Past Presidents; Messrs. J. P. Coley, J. S. S. Davis, R. A. Green, B. H. Grose, M. Le Sueur, J. Sulston, and A. F. Wigram, Members of Council.

Mr. R. L. Weedon, General Secretary; and Mr. V. H. Smith, Secretary, General Purposes Committee.

The guests of the Institution were Mr. John Ratter, Technical Adviser to the British Transport Commission, and Brigadier C. A. Langley, Chief Inspecting Officer of Railways, Ministry of Transport. Others present included Sir J. Landale Train, Member of the British Transport Commission and an Honorary Member of the Institution; Sir Cyril Hawker, Director of the Bank of England; and Mr. A. B. Quick, Chairman of the Clacton Urban District Council Transport Committee and Chairman of the N.E. Essex Transport Committee.

The guests from overseas included Mr. J. P. Cunliffe, Signal Engineer, Malayan Railway, and Mr. V. J. M. De Blieck, European Manager of the General Railway Signal Company of America.

After the Loyal Toast had been offered by the President, the toast of the Institution, coupled with the name of the President, was proposed by Mr. Ratter, who referred to the fact that the Institution of Railway Signal Engineers would reach its 50th birthday in four years' time. The Permanent Way Institution, of which he had the honour to be this year's President, would be 75 years old next year.

Mr. Ratter remarked how very much more complicated was the life of the engineer now than in the days which saw the birth of those institutions. Perhaps the change in the nature of railway signalling had been greater than in any other branch of engineering. It was a far cry from yesterday's wires and rods, semaphores and oil lamps, and fog detonators, to the electric signalling of today and the fascinating prospects of tomorrow. The signal engineer had, in the lifetime of the Institution, become completely transformed. The pace of the change must accelerate still further, if the railways were to have the full benefit of all the techniques available in the electronic field.

Recruitment of Signal Engineers

The signal engineer, he added, had a unique position on the railways. He could be taught his profession nowhere else and could not practice it until he had gained a sound knowledge of railway operation.

The standards of the Institution of Railway Signal Engineers were high, and with the great demands being placed on the profession by the railway modernisation plan, one had to ask whether enough was being done to recruit, train, and bring into the Institution all the skilled signal engineers that were needed. The job was a fascinating one, bringing one into close touch with every branch of railway work. It was no dead-end job, and could lead the engineer, who aspired to management, to the goal he sought, by a very direct path. It should therefore be attractive to the very best type of ambitious young man.

Signalling in the Modernisation Plan

The modernisation plan for British Railways contained £150,000,000 for signalling work. Nearly one-half of that was for signalling on lines which were being electrified. About one-quarter of the whole of the money spent on electrifying a line went on signalling.

There was so much that the signal engineer could do to provide means of efficient and safe operation, but it was imperative for the future of the profession and of industry that it be done at a cost the railways could afford.

Less Expensive Signalling Equipment

Mr. Ratter went on to urge that the work that the Institution and the profession were doing to further the design of lighter, simpler, and less costly equipment, and to promise the development of advanced and more versatile techniques, should be pressed forward with all the strength at their command. The Commission would support that effort in every way it could.

In conclusion he wished the Institution success in the great endeavours that were before it.

Mr. J. F. H. Tyler, responding, thanked Mr. Ratter for his references to the Institution and its work. On October 1, he pointed out, Mr. Ratter would leave his present post of Technical Adviser to become a full-time Member of the British Transport Commission, and Mr. Tyler offered him, on behalf of everyone present, heartiest congratulations and good wishes for the future. Mr. Ratter would succeed Sir Landale Train, whom the signalling profession in this country, under nationalisation, had to thank for its independent position in all Regions of the British Railways' organisation. Mr. Tyler expressed to Sir Landale and to Lady Train very best wishes for a long and happy retirement.

The Institution was founded to promote the science of railway signalling. Years ago, the introduction of modern signalling was justified by the direct economies it produced. Nowadays, there was a more enlightened outlook, and it was realised that increased efficiency in operation produced its own economies.

Keeping Down Costs

The signal engineer and the manufacturer had at their disposal every modern scientific aid. There was very little which could not be done towards eliminating the human element in railway operation. The Institution had taken a lead in seeing what could be done towards keeping costs down, without relaxing safety in any way, by setting up the so-called Miniaturisation Committee, where manufacturers and users together were redesigning certain equipment. Mr. Tyler thanked the manufacturers for their co-operation in this work, the progress of which was encouraging, although too slow to satisfy everyone.

The signal engineering profession was taking its share of the responsibility for seeing that the modernisation plan was justified. The Regional signal engineers were working under very high pressure to achieve results, as were the manufacturers, and good wishes were offered to them in their endeavours to meet their targets.

Mr. D. G. Shipp proposed the toast of "The Visitors." He referred to some of the activities of Brigadier Langley. The operation of the railways, he stated, was based on carefully-framed rules and regulations laid down by the Ministry of Transport & Civil Aviation, and it was one of Brigadier Langley's duties, as Chief Inspecting Officer of Railways, to see that those rules were observed, particularly when new signalling installations of any importance were brought into use. It was a pity that that valuable function was brought less to the attention of the public than the occasions when the Chief Inspecting Officer had to preside at technical enquiries into railway accidents. There, again, the work of Brigadier Langley and his colleagues was of inestimable value to all concerned with railway operation.

High Standard of Maintenance

Brigadier C. A. Langley replied on behalf of the visitors. He had been asked, he said, by the Minister of Transport, Mr. Harold Watkinson, to say how much he regretted being unable to be present that evening.

During the last 12 years, he went on, he had come to appreciate the sterling worth of the signal engineer in improving railway operation and safety of railway travel. He had inspected signalboxes of all types and sizes throughout the land and had been constantly impressed by the meticulous care which was taken, not only in the installation of the equipment, but more important still, in the scrupulous testing, down to the last detail.

Sir Landale Train, stated that his great desire, since the time of wires, rods and cranks had been left behind, was to see signal engineering as a separate profession. He was delighted to have proof of what the signal engineers were doing towards making themselves into a separate profession, and a very essential one.

When he departed from the B.T.C., he would go, of course, with regret, but he would also go with great pleasure, because there was, in Mr. Ratter, someone to succeed him, who had shared his views throughout. He wished good luck to them.

GLOUCESTER RAILWAY CARRIAGE & WAGON CO. LTD.—General Sir William Morgan, Chairman, Gloucester Railway Carriage & Wagon Co. Ltd., in his circulated statement, reports that the parent company has enjoyed a year of well-balanced production that has permitted regular deliveries of various types of rolling stock to British Railways and overseas railways. Diesel railcars again figured largely in the works programme, while there was continued demand from overseas for the cast-steel bogie, many hundreds of which were supplied. Looking to the immediate future, he states that the company recently secured large wagon contracts from the Nigerian Railway Corporation. This work, added to existing orders, will keep the operatives engaged during the current year.

Ministry of Transport Accident Report

Ince Moss Junction, February 17, 1958;
British Railways, London Midland Region

Colonel W. P. Reed, Inspecting Officer of Railways, Ministry of Transport & Civil Aviation, inquired into the accident which occurred at about 2.12 a.m. on February 17, 1958, at Ince Moss Junction, between Wigan and St. Helens, when the 2 a.m. express, Wigan to Liverpool, consisting of seven coaches drawn by a 2-6-4 tank engine ran into a 4-6-0 tender light engine which had been standing at the home signal for about 26 min. The signal was "off" as the signalbox was switched out, as were seven others between it and St. Helens, some seven miles away. The driver had stopped, however, to leave the footplate and go to a cabin where relief crews assembled and telephone thence to the Controller, as explained below. No steps had been taken to protect the engine and the express became admitted to the occupied block section by the grave negligence of the signalman at St. Helens No. 3 box. Speed on collision was not high and only one passenger received minor injury; the driver of the light engine was more seriously hurt and the train guard fatally injured. Emergency arrangements were promptly and thoroughly made. It was a dark, clear night.

Course of Events and Evidence

Ordinary block telegraph is in operation and the block section extended from Springs Branch No. 1 box, which controls the junction between the main line from Wigan and the St. Helens line, and St. Helens No. 3. The home signal for Ince Moss Junction, the first box along the branch, can be seen from the back of Springs Branch No. 1 box but not the running lines near it if vehicles are in adjacent sidings.

The driver of the express said he was stopped at the home signal leading to the branch; it was cleared in about a minute and he had reached a speed of about 25 m.p.h. when he saw the engine's tail light, and braked immediately, but struck it before that could take effect. He spoke to his injured guard and sent his fireman to protect the line in rear.

The fireman could not see the line ahead owing to stock standing in a siding, and was preparing to fire when the collision occurred.

The light engine was in charge of a passed fireman. He had reported at 11.30 at Preston expecting to work a special train to Stoke but was told this was cancelled and he was to take the engine to Edge Hill. The shed foreman, who knew him to be unfamiliar with the road beyond Ince Moss Junction, told him a conductor driver had been arranged for. (He had worked on the line as fireman, but not passed for the route as driver.) He said he was stopped by signal at Springs Branch No. 2—on the Wigan side of No. 1—and thought the conductor might join him there, as the depot is close by but, in view of his instructions, did not call out to the signalman about him. Moving forward, he stopped at the Ince Moss Junction home signal, which was, of course, at clear, at about 1.46. He told his fireman to remain on the engine and walked the 220 yd. to the relief cabin and telephoned about the conductor driver; he was told that no request had been received but that arrangements were being made forthwith to send one from the Springs Branch depot. He went back to his engine, took off the brake, and waited for this man; about 10 to 15 min. later the collision occurred.

He could give no good reason for stopping at the signal instead of at the relief cabin, which would have avoided an unpleasant time wasting walk; his only excuse for not arranging for the engine to be protected was the conductor might arrive while the fireman was gone and they would have had to await his return.

Further evidence confirmed that the Motive Power Controller at Preston had been told that the conductor was required but this information did not appear in the record of the message as received in the Control Office at Liverpool.

The fireman of the light engine, a passed cleaner, generally confirmed this evidence; he said he forgot about the rule requiring the engine to be protected in such a case, but it is more likely he felt it was not for him to argue with his driver, who did not at any time suggest that he ought to go back.

The conductor driver was walking along the line when the passenger train passed and reached the scene a few minutes after the accident. He warned Control, telephoned for an ambulance and went to the assistance of the light engine driver, rendered unconscious. He did not immediately assume an accident must happen when he heard the express; he thought the signalman had given it precedence. In any case he could not have stopped it.

The signalman at Springs Branch No. 1 box, being assisted by a district relief signalman, said the engine was accepted by St. Helens No. 3 and passed at 1.45. He expected it to arrive there in about 20 to 25 min. and was concerned for the long block section to be cleared promptly so as not to delay the express, which he himself accepted at 2.4. He gave the one ring "call attention" signal to St. Helens to check up on the alertness of the man there, but there was no answer; after a pause he gave the signal "shunt for following train to pass," to which also there was no immediate response. The express arrived at 2.10 and he was about to give the "emergency call attention" signal when he received "out of section" for the engine, offered the express—which was accepted—and cleared his home signal. The collision occurred about a minute later.

He had no reason to suspect anything unusual about the engine's journey. His prompting of the other signalman arose from experience, in working with him, of occasional delays in getting quick action and his wish to prevent delay to the express. He had not been told a conductor was required; with Ince Moss Junction box closed it was more usual for one—or a relief crew—to join engines close to the motive power depot. After the collision he taxed the signalman at St. Helens with clearing the block irregularly and he admitted the fault.

The relief signalman, who was not busy, said he noted his colleague's action with regard to the engine and express. Both men saw the engine's tail lamp before it passed round a curve. This signalman, on hearing the collision, went at once to the scene and then opened Ince Moss Junction box and sent "obstruction danger" at 2.35.

The signalman at St. Helens said there had been little traffic during the night and he had been reading. At 1.32 he received "out of section" from Springs Branch for an up train and two minutes later accepted the engine on the down line; "entering section" was received at 1.40 and he offered the engine forward. The box was quiet and he resumed his reading. He did not hear the "shunt for following train to pass" signal —1-5-5, eleven rings on the bell—sent some 27 min. later; he said he heard a noise which he took to be the engine, gave "entering section" forward and "out of section" in rear. He did not look for a tail lamp and accepted the express. He suggested the noise was made by a heavy vehicle on the road overbridge nearby and admitted he "made a bad slip" in not looking for the tail lamp. The block bells were audible and working properly; he could give no reason for failing to hear them. He had no troubles on his mind, was not unduly tired and not dozing, as far as he knew.

The district signalman's inspector had no criticism to make of this man's work on his periodical visits during the past two years he had been in the district.

The stationmaster, 10 years at St. Helens, who visited the box daily, had had no cause in recent years to speak to him about his work, nor had he received reports of his lack of alertness in answering bell signals.

This man's work as signalman had not been entirely reliable in the past; there were three entries of block irregularities in his record during the nine previous years, but none was recent. It was decided, however, to remove him from signalling duties.

Conclusion

Responsibility rests primarily on the signalman at St. Helens who failed to make sure the engine had passed before giving "out of section," a simple but vital duty. It may be he fell asleep after accepting it, awoke to hear a noise which he thought must be it, but having failed to see a tail lamp it was his plain duty to make sure, from the signalman in advance that the engine had arrived before he cleared the block section. His evident lack of alertness does not excuse his irresponsible behaviour, though it may have contributed to it. He had worked long hours—as part of a normal week-end roster enabling each of the three men at a box to have one week-end in three free of duty—but did not complain on this account or suggest he had become unduly tired. In view of certain evidence Colonel Reed does not consider his lack of alertness on this occasion attributable to the hours he worked.

The light engine driver was seriously at fault in failing to protect it. It was pointless, stopping where he did, and caused time to be lost; he could still have prevented the accident by sending his fireman back directly he himself had rejoined the engine.

There was a mistake in message passing between Preston and Liverpool Control Offices, which resulted in the engine waiting as it did but the accident cannot be attributed to that. Absolute block working does not depend on the time taken to travel between block points, although the regulations include precautions to be taken when a train stops in section.

Remarks

Signalmen generally are understood to be in favour of the longer hours worked two week-ends out of three, only used where

work then is light. The hours seem long but Colonel Reed does not question their use under suitable conditions.

It is obviously undesirable that an engine or train should be stopped in a long block section for a conductor or relief driver and there was some uncertainty in the minds of the staff about the right place for the conductor driver to join this engine with Ince Moss Junction box closed. Need for such a driver on a train proceeding to the branch at weekends—when this box is switched out—seldom arises but it is understood that instructions are being issued to ensure that any train requiring one shall not enter the block section until he has joined it.

The accident should not have been possible had full block controls—including the "Welwyn" control—been in operation, preventing acceptance of a train unless the previous one has occupied and cleared a track circuit or its equivalent at the forward end of the section. This is now standard for fast running lines, but has not yet been provided at all signalboxes. Conditions on this branch line do not justify any priority for its installation, but such controls are to be put in as the boxes there became due for modernisation.

Mechanical Handling at Coal Depot

The advantages of mechanical handling at a rail-served coal depot were shown at a recent demonstration of Jones mobile cranes, fitted with their hydraulic grabbing attachments. The demonstration was given at the Cambridge depot of Austin Beales & Co. Ltd.

Jones crane fitted with cranked jib and hydraulic grab attachment

The equipment was fitted to both a Jones KL 33 (3-ton capacity) and a Jones KL 66 (6-ton) mobile crane; each was equipped with a cranked jib and a capacity respectively. The larger crane hydraulic grab of 1 cu. yd. and 1½ cu. yd. off-loaded from rail to road vehicle 3 ton 8 cwt. 3 qr. of coal (3 in. × 5 in. cobble) in 3 min. The smaller handled 1 ton 17 cwt. 1 qr. in the same period.

The main advantage claimed for the hydraulic grab attachment, when handling coal, is that the action of lowering the grab on large coal does not tend to produce smalls.

The hydraulically-operated grabs are attached to the head of the cranked jibs on pivots and are brought gently down on the coal by the derricking action of the jib, also hydraulically-operated. A further advantage lies in the reduced wear to railway wagons, hoppers, and road vehicles. The design of the cranked jib enables the grab to be brought to ground level at the lower limit of the derricking action.

Other equipment demonstrated included the Fyson Feed Conveyor, manufactured by C. J. R. Fyson & Son Ltd. This has a large-capacity hopper. It is designed primarily for quick discharge of bulk materials from tipping lorries. The Jones cranes and jib attachments are designed and manufactured by K. & L. Steelfounders & Engineers Limited.

Improved Signalling at Watford, London Transport

London Transport has replaced the mechanical signalling at the terminal station at Watford on the Metropolitan Line by an entirely power-operated installation.

Signalling at Watford is now automatically operated by programme machines, the first to be used on a surface line by London Transport. One sequence and one time machine have been installed. They carry out the following routing of trains:

(*a*) The reversal of trains of multiple

"Flying Scotsman" Diesel Hauled

The "Flying Scotsman" leaving Kings Cross headed by a type "4" 2,000-h.p. diesel-electric locomotive built by the English Electric Co. Ltd. (see our issue of October 10)

unit stock in either platform and their dispatch at the correct departure times.

(*b*) The automatic setting of routes to run the locomotive of a locomotive-hauled train round its train before dispatching it at the correct time.

(*c*) The preparation for the morning service. Trains are shunted from the electrified sidings to the running line and then reversed into the platform and dispatched at the correct time.

(*d*) The routeing of trains at night and in off-peak periods from the platforms to the appropriate sidings.

To deal with any special circumstances outside the normal timetable working at Watford the signalman at Rickmansworth, who supervises the working at Watford, is provided with a control panel and has push buttons so that he can route trains at Watford manually should this be necessary. Normally, the programme machines carry out all movements automatically.

Staff and Labour Matters

Railway Pay Review

Further discussion took place on October 14 between the Chairman and other representatives of the British Transport Commission and representatives of the N.U.R., A.S.L.E. & F. and T.S.S.A. Efforts were made to solve the difficulty which has arisen in connection with the terms of reference to the Independent Body which it is proposed to set up to undertake the inquiry into railway pay.

The N.U.R. has taken exception to the wording in the terms of reference providing for the Independent Body, in finalising its report, to make observations and conclusions. The N.U.R. contends that the body should be empowered to make recommendations. After a full exchange of views the N.U.R. representatives undertook to report on the discussions to their Executive Committee and to advise the Commission of the Executive Committee's decision on the matter.

Shipbuilding Workers' Pay Claim

Agreement was reached on October 7 between the Shipbuilding Employers' Federation and the Confederation of Shipbuilding & Engineering Unions, under which the wages of employees in the shipbuilding and ship repairing industries were increased by 7s. 4d. a week for skilled workers, 6s. 8d. for semi-skilled and 6s. for unskilled workers, with effect from October 6.

Eastern Region Medical Coach

The mobile medical examination, which, as reported in our October 3 issue, has been placed in service by the Eastern Region of British Railways is accommodated in a converted coach.

The original interior has been completely stripped and replaced by four main rooms and a number of ancillary rooms. The medical officer has a consulting room equipped with a desk and chair, a steriliser, and a wash-hand basin.

Next to the medical officer's room is the examination room equipped with two cubicles and a couch. This room opens into a small office for the clerk. There is a waiting room equipped with long movable benches and alongside is an eyesight-testing room of the normal length. The suite is completed by a toilet compartment. Formica panelling has been used in various shades in the interior finish of the coach.

Electric lighting and power is provided from either mains or batteries as local conditions may require. Heating is by electric radiators and by gas fires run on liquid gas which is also used to heat water. The coach can also be used for purposes other than medical examination such as influenzal vaccination and treatment. The conversion was carried out at Doncaster Carriage & Wagon Works, Eastern Region.

At the moment most Eastern Region staff are examined only at the medical centres. This results in some cases in a considerable amount of travelling time which is both inconvenient to those being examined and wasteful. In future, medical officers of the region will see considerably more staff at points near to where they are employed and much working time at present lost will be saved. In particular, staff on railway ships operating Continental services from Harwich will avoid the need either to travel to London or to be examined on a ship which happens to be in port.

The purpose of the medical examinations is to ensure the fitness of staff resuming duty after illness and those, such as locomotive drivers, who are required to undergo periodical physical and visual examinations.

Medical officer's consulting room, showing steriliser and wash-hand basin and view through to the waiting room

PASSENGER MOVEMENT IN BRAZIL.—The railways incorporated in the Federal system carried 281,748 million suburban and 57,168 million long-distance passengers in 1957. The greatest densities were registered over the Central of Brazil Railway, with 184,962 million suburban and 15,204 million long-distance passengers; over the Santos-Jundiai, with 54,174 and 11,142 million; and over the E. F. Leopoldina, with 27,565 and 6,597 million.

UNIFORM FARES IN U.S.A.—The Kansas City Southern Railway Company has abolished its first class passenger fares, and has booked all passengers at the "coach" or second class rate. On all other railways Pullman sleeping or parlour car passengers pay first class fare plus the Pullman supplement; but on the K.C.S. it is necessary only to add the latter to the second class rate, which means an average reduction of 29 per cent in the cost of Pullman travel.

AIR-CONDITIONED COACHES IN VICTORIA.—An air-conditioned train service has been introduced between Melbourne and Swan Hill. The air-conditioned cars are of the latest first class saloon carriage and a second class compartment type. The foam-rubber upholstered seats of the saloon car are the adjustable, reclining type with footrests. The seats can also be turned to face the direction of travel, or turned in pairs to give a foursome arrangement. Other features of the new car are wide landscape windows, a public address system, chilled drinking water, and card tables. Provision has also been made for passengers wanting to use an electric razor. The compartment carriage is the type included in such trains as the "Spirit of Progress" and "The Daylight." The Melbourne-Swan Hill passenger service provides for a train in each direction on Mondays to Saturdays. At Bendigo, a buffet car is attached to the Melbourne bound train.

IMPROVEMENTS IN PRETORIA AREA.—Work on the £18,000,000 modernisation improvement programme of the South African Railways in the Pretoria area is progressing according to schedule. The major part of this amount was spent on the Koedoespoort mechanical workshops which were described in our issue of June 27 and August 1. Other improvements include a new administrative building for the office of the System Manager; the construction of a new double line from Cor Delfos to Atteridgeville; the doubling and electrification of the Capital Park-Koedoespoort-Eerste Fabrieke, the Mitchell Street-Cor Delfos, and the Pretoria-Koedoespoort lines; the quadrupling and electrification of the Pretoria-Mitchell Street and Mitchell Street-Hercules lines; a new electric running shed at Capital Park; the remodelling of Pretoria station yard; and the elimination of several level crossings. Except for a small portion of the Pretoria-Koedoespoort line all the track earthworks are complete and tracklaying is progressing well.

Contracts and Tenders

Multiple-unit diesel railcars for the British Transport Commission

The British Transport Commission has placed orders for 168 diesel multiple-unit train vehicles, each of 63 ft. 6 in. in length, comprising 57 motor open second class cars, 57 motor open brake second class cars, and 54 intermediate first and second class composite trailer cars, for use in the Western Region of British Railways.

The Pressed Steel Co. Ltd., Paisley, is to build 123 of the vehicles, and the remaining 45 are to be built by the Birmingham Railway Carriage & Wagon Co. Ltd., Smethwick.

British Railways, North Eastern Region, has placed the following contracts:—

F. & J. Watkinson, Bradford: restoration of "F" shed, Bradford Adolphus Street Goods Depot

A.1 Electric Welding Machines Limited, Inverness: rail stripping machine

Wright, Anderson & Co. Ltd., Gateshead: supply of steelwork for reconstruction of superstructure, Bridge No. 54, Goole-Wakefield.

British Railways, Scottish Region, has placed the following contracts:

Steels Engineering Products Limited, Glasgow: 11 mobile cranes for goods stations in the Scottish Region

Foundry Equipment Limited, Leighton Buzzard: plant and equipment for new brass foundry, St. Rollox Works, Glasgow

Alexander Lindsay Limited, Glasgow: electric lighting installation, Newton passenger station, yards, and new power-operated signalbox, Glasgow Suburban Electrification.

British Railways, Southern Region, has placed the following contracts:—

Durable Asphalte Co. Ltd., London, N.1: recladding of platform roofs, Windsor & Eton Riverside Station

C. & T. Painters Limited, London, N.W.10: renovations, Netley Station

W. R. Payne & Sons, Limited, Shipley, Yorks: renovations, Ewer Street Depot

Walter Cowen Limited, London, W.14: installation of central heating, water & gas services, Queen Street Offices, Cannon Street

G. E. Prince & Son Ltd., Southampton: new staff accommodation, Eastleigh

Taylor Woodrow Construction, Limited, Southall, Middx: carriage cleaning shed, inspection pits, Fratton

W. H. Gaze & Sons Ltd., London, S.W.15: roadworks and paving, Chessington South

Taylor Woodrow Construction Limited, Southall, Middx: new berthing and maintenance depot for diesel-electric locomotives, staff accommodation and ancillary works, Hither Green

R. Corben & Son Ltd., Maidstone, Kent: construction of 26 substations and track paralleling huts, East Kent Area extension of electrification

Dorman Long & Co. Ltd., London, S.W.1: fabricated steelwork for new staff buildings, Victoria

Everlaut Limited, London, W.C.2: improved storage facilities, Waterloo

A. Cameron Limited, Sutton, Surrey: cleaning, painting and tarring of bridges, Group "A," London Eastern District

C. & T. Painters Limited, London, N.W.10: cleaning, painting and tarring of bridges, Group "B," London Eastern District

Rashleigh Phipps & Co. Ltd., London, W.8: electrical installation, St. Cross School, Walton-on-the-Hill

W. H. Gaze & Sons Ltd., London, S.W.15; road surfacing and new footpath, Redhill

The Bostwick Gate & Shutter Co. Ltd., London, N.W.10: new barrier gates, Cannon Street

Ozonair Engineering Co. Ltd., Rochester, Kent: installation of ventilation and heating, Bromley South

Meridian Airmaps Limited, Shoreham Airport, Sussex: aerial surveys, Wokingham, Tonbridge, and Lewes

Cartographical Drawing Services Limited, Southampton, Hants: aerial surveys, Gomshall, Tonbridge, and Penshurst

B.K.S. Air Surveys Limited, Leatherhead, Surrey: aerial surveys, Hurst Green Halt, Tonbridge and Forest Row

W. H. Gaze & Sons Ltd., London, S.W.15: surfacing of car park, Haslemere

Haskel Robertson Limited, London, W.1: renewal of mosaic flooring in lavatories, Waterloo.

The Special Register Information Service, Export Services Branch, Board of Trade, has received calls for tenders as follow:—

From India:

16 items of signal equipment.

The issuing authority is the Director General of Supplies & Disposals. The tender No. is WP-2/4446/6C. Bids should be sent to the Director General of Supplies & Disposals, Shahjahan Road, New Delhi. The closing date is October 31, 1958. The Board of Trade reference is ESB/24772/58.

628 counterweight levers, type "A," one way, complete with all parts

16 counterweight levers, type "A," two way, complete with all parts

910 counterweight levers, type "B," one way, complete with all parts.

The issuing authority is the Director General of Supplies & Disposals. The tender No. is WP-2/4446/5C. Bids should be sent to the Director General of Supplies & Disposals, Shahjahan Road, New Delhi. The closing date is November 6, 1958. The Board of Trade reference is ESB/24771/58.

From South Africa:

500 perforated plates, ungalvanised, to S.A.R. drawing C.E. No. A.216/1/15882, item 5

500 perforated plates, galvanised, to S.A.R. drawing C.E. No. A.216/1/15882, item 11

Alternatively

1,000 perforated plates to S.A.R. drawing C.E. No. A.216/1/15882, item 5, of which 500 are to be galvanised.

The issuing authority is the Stores Department, South African Railways. Bids, in sealed envelopes, endorsed "Tender No. K7530, Perforated Plates," should be addressed to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg. The closing date is November 7, 1958. Local representation is essential. The Board of Trade reference is ESB/25073/58.

From Uruguay:

376 steel wagon axles.

The issuing authority is the Administración de Ferrocarriles del Estado. The tender No. is 417/58. A guarantee of Ur. $7,300 is required for maintenance of offers. The closing date is November 13, 1958. Local representation is essential. The Board of Trade reference is ESB/24672/58.

From Iran:

1,000 tyre bands for wagons, model D15.

The issuing authority is the Iranian State Railways Administration. A deposit of 65,000 rials is required. The closing date is October 29, 1958. The Board of Trade reference is ESB/24804/58.

Further details regarding the above tenders, together with photo-copies of tender documents, can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1.).

Notes and News

Superheater Co. Ltd. Change of Address.—The Superheater Co. Ltd. has moved its London office to 97, Tottenham Court Road, London, W.: tel. Langham 0431.

Extension of Tokyo Underground Line.—A further section of the Marunouchi Line of the Teito Rapid Transit Authority (Tokyo), that from Nishi Ginza to Kasumigaseki, 0.6 miles, was due to be opened on October 15. The remainder of the Marunouchi Line, from Kasumigaseki to Shinjuku, is expected to be opened in March, 1959, a month earlier than was previously announced. The Tokyo underground lines were the subject of an illustrated article in our October 10 issue.

New British Standard for "As Welded" and Cold-Drawn Welded Tubes.—The new British Standard, B.S.3014:1958, specifies requirements for "as welded" and cold-drawn welded tubes manufactured from austenitic stainless steel strip welded across the abutting edges throughout their length. Tubes in the "as welded" condition are available in sizes from ⅜ in. up to 2½ in. outside dia., in ¼-in. steps, and in thicknesses from 22 s.w.g. up to 12 s.w.g., depending on the dia. The standard contains a series of general requirements for test and inspection purposes. Specific requirements, such as delivery conditions and permissible variations in dimensions are specified for each of the two types of tube. Copies of this British Standard, price 4s. 6d., may be obtained from the British Standards Institution, British Standards House, 2, Park Street, London, W.1.

Fire in Newcastle-Kings Cross Express, Eastern Region.—A fire broke out in the first brake van of a Newcastle-Kings Cross express train, Eastern Region, British Railways, in the early hours of October 9. The train had left Newcastle at 10.25 p.m. on October 8, and had reached Hornsey when the fire was discovered. The train was stopped and the guard, two attendants, the locomotive fireman, and the station inspector put out the blaze with extinguishers. The brake van was extensively

damaged and its load of newspapers destroyed. The train was 23 min. late at Kings Cross.

B.I.C.C. Limited Worcester Branch Change of Address.—The address of British Insulated Callender's Cables Limited Worcester Branch will be changed to 4, Charles Street, Worcester, on October 20. The telephone No., Worcester 2070, remains the same as before.

Rhodesia Railways at Commonwealth Institute.—We regret that the name of Mr. R. E. Fordham, of Messrs. Freeman Fox & Partners, was printed in error as Rodham on page 463 of our October 10 issue as a guest at the luncheon given by Beyer Peacock & Co. Ltd. and the Metropolitan-Cammell Carriage & Wagon Co. Ltd. at the Savoy Hotel.

New Diesel Depot at Rugby.—A diesel locomotive examination and repair shop and an oil fuelling installation is under construction at Rugby Locomotive Depot, London Midland Region, on which 12 diesel-electric shunting and one mixed-traffic locomotives are based. The examination and repair shop will be housed in the building formerly know as the tender shop. The fuelling installation will include two 7,000-gal. tanks, a pump house containing two electric pumps, and ancillary equipment. The shunting locomotives perform scheduled duties at Northampton, Coventry, and Nuneaton as well as at Rugby itself; the mixed-traffic diesel works between Birmingham, Rugby, and Peterborough.

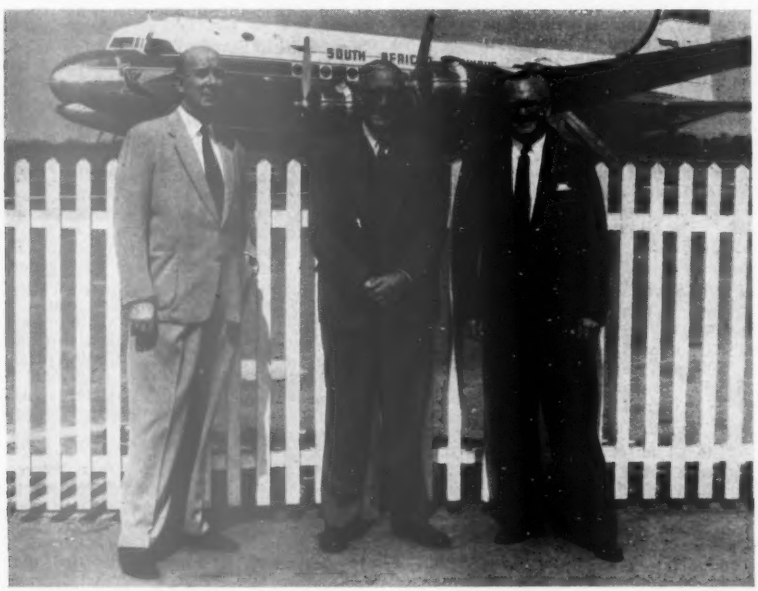
Operation of Bulawayo-Vryburg Line.—Agreement is reported between Rhodesia Railways and South African Railways on the working of the 580-mile section between Bulawayo and Vryburg. The line is the property of Rhodesia Railways whose locomotives have worked over it. All staff, including engine crews, have been S.A.R., as has been the coaching stock used on the section. The result of the agreement is understood to be that Rhodesia Railways will work the line exclusively, at least as far as Mafeking, in Union territory and a junction with the S.A.R. Between Bulawayo and Mafeking the line is mostly in the territory of the Bechuanaland Protectorate.

Acheson Industries (Europe) Limited, Change of Address.—The address of Acheson Industries (Europe) Limited has been changed to 1, Finsbury, Square, London, E.C.2: tel. Monarch 5811.

Alterations to L.T.E. Country Bus and Coach Services.—London Transport announced recently details of the winter timetable alterations for country bus services. The timetables include economies necessitated by the heavy fall in passenger traffic. Twelve little-used routes are withdrawn but in some cases other routes are diverted or extended over sections of the withdrawn routes. Another 13 routes are withdrawn on Sundays and other services will be converted to one-man operation or reduced in frequency, especially at weekends, to secure economies.

Drawings for British Standard for Mechanical Signalling Equipment.—Drawings, 13 in. × 16 in., are now available for British Standard 689:1957 (railway mechanical signalling equipment) under the following references: 689-101, cast-iron signal wire pulleys; 689-103, stake for signal wire pulleys (showing standard hole spacing); 689-201, channel point rodding; and 689-202, round point rodding. The price is 2s. 6d. each. The drawings are obtainable from the British Standards Institution, 2, Park Street, London, W.1.

Eastern Region Container Vessel Launched.—Mrs. A. J. White, wife of the Assistant General Manager, Eastern Region, British Railways, launched the mv. *Colchester* at the yard of the Goole Shipbuilding & Repairing Co. Ltd., Goole, Yorkshire, last Tuesday. This vessel is the second of sister ships ordered from the company by the Eastern Region for its Continental freight services between Harwich and Rotterdam, and Harwich and Antwerp. They have been designed to carry a full load of rail freight containers, or general cargo, or alternatively part loads of each.



Mr. J. W. S. Pegrum, General Manager, with (left) Mr. L. A. W. Hawkins, Principal Executive Officer (Technical), and (right) Mr. C. W. L. Barnes, Assistant Programme & Statistical Officer, Rhodesia Railways, en route to Johannesburg to discuss operation of the Bulawayo-Vryburg line

Maiden Voyage of Container Venturer.—The *Container Venturer*, the second new container ship for British Railways, London Midland Region, made her maiden voyage between Heysham and Belfast last Monday. For the first week she will replace sister ship *Container Enterprise* and afterwards the two vessels will maintain a daily service with a potential shipping capacity of nearly 400 large containers a week in each direction.

Increased Traffic by Harwich-Zeebrugge Ferry.—Traffic by the wagon ferry between Harwich and Zeebrugge has increased by 10,000 tons this year. The ferryboats are now sailing four times a day; in some cases they turn round at the port in only 2 hr. after the 8-hr. crossing. Three vessels at present operate the service. Imports include large quantities of fruit from Southern Italy. Export traffic is consigned to a variety of destinations in all parts of Europe.

B.T.C. Travel Film Gains Award at Cork Film Festival.—A British Transport Commission colour film, "Between the Tides," has been awarded first prize in the instructional and educational category of the Cork Film Festival. Last month the film received a first prize at the Venice Film Festival. "Between the Tides" shows some of the plant and animal life to be found by the tourist and holiday-maker on the West Coast of Britain. It was made to stimulate travel, and was directed by Ralph Keene, produced by Ian Ferguson, and photographed by Ronald Craigen. The commentator is Stephen Murray, and Edgar Anstey is the executive producer for the B.T.C. Films Service.

Dealing with Traffic of Former G.N.R. in Dublin.—As a result of the acquisition by Coras Iompair Eireann of the assets in the Republic of the former Great Northern Railway, changes are being made in arrangements for dealing with traffic. The former G.N.R. passenger booking and enquiry office, parcels office and cloakroom at 2, Lower O'Connell Street, have been closed. Passenger bookings and enquiries relating to services formerly operated by the G.N.R. have been transferred to 33, Bachelors Walk, Dublin. Enquiries as to road freight services in the area previously served by the G.N.R. are being dealt with by the Road Freight Section, Transport House, Bachelors Walk, and at Sheriff Street Goods Depot. There have been changes in the bus services in the former G.N.R. area, and at depots and stations in the area.

Proposed Road Over Railway Tracks.—Mr. Harold Watkinson, Minister of Transport & Civil Aviation, has announced details of a three-mile viaduct road above the British Railways tracks through Smethwick and Oldbury and south of West Bromwich. This would link the three motorways converging on Birmingham from London and the south-east, South Wales and the West of England, and Preston and the north-west. Besides maintaining headroom over the tracks, the road would also have to clear existing roads already bridging the railway, so that the clearance would have to be about 45 ft.

above rail level. The cost is estimated at £4,000,000 and the consulting engineers are Sir Owen Williams & Partners.

Ferguson & Palmer Change of Name and Address.—The name and address of Ferguson & Palmer, Engineers and Agents, is to be changed on November 1, 1958, to Ferguson, Palmer & Kefford, Locomotive House, Buckingham Gate, London, S.W.1; tel. Victoria 5278/9.

Scottish Region Poster Featuring Inverness.—British Railways, Scottish Region, has produced a poster in full colour showing the pipe band of the Queen's Own Cameron Highlanders marching along Ness Walk, Inverness, with the Castle in the background on the far side of the River Ness. The poster is from a painting by Lance Cattermole, R.O.I., and is being displayed at stations throughout Great Britain. Copies have been sent also to Canada and the U.S.A., where Scottish posters are reported to be very popular, and to countries on the Continent of Europe.

Record Tourist Traffic in August.—Figures released by the British Travel & Holidays Association show that 188,000 overseas visitors came to Britain in August, an increase of 5 per cent over the total for August, 1957. The largest increase was in visitors from the U.S.A. Traffic from Europe showed an overall decrease of 7 per cent, from 102,500 to 95,700. This was caused almost entirely to a fall in the traffic from Belgium and France, probably attributable to the Brussels Exhibition.

Closure of Daisyfield and Lower Darwen Stations, L.M. Region.—British Railways, London Midland Region, has announced that from November 3, Daisyfield Station, between Blackburn and Clitheroe, will be closed for all traffic and Lower Darwen Station, between Bolton and Blackburn, will be closed for passenger traffic. Parcels and passenger train merchandise will be dealt with at Blackburn and Darwen respectively. The present arrangements at Lower Darwen for freight traffic will continue.

Acrow (Engineers) Limited Results.—The group trading profits of Acrow (Engineers) Limited, manufacturers of building equipment and plant, for the year ended March 31, 1958, were £687,185 (£630,394). After all charges, net profits totalled £240,619 (£256,804). A final dividend of 10 per cent has been declared on the ordinary and "A" ordinary capital increased to £450,000 by an issue of "A" ordinary shares, making a total payment of 40 per cent on the enlarged capital. Last year's total was 37½ per cent on the smaller capital.

Modernisation in the North West.—Lord Rusholme, Chairman of the London Midland Region Area Board, mentioned further modernisation plans for the Region at the annual dinner, in Manchester on October 10, of the North Eastern Section of the Federation of Civil Engineering Contractors. He referred to the conversion of Ancoats and Ardwick into one-way depots for handling outwards and inwards traffic and the recent opening of the forwarded sundries shed at Liverpool Speke-land Road. He then announced that attention was being given to a further six depots: Liverpool Huskission, Manchester Oldham Road, Oldham Clegg Street, Chester, Liverpool Wavertree, and Manchester Liverpool Road. To speed up the work a light steel structure had been standardised. One marshalling yard at Carlisle, dealing with 5,500 wagons a day, would replace the existing nine yards. Lord Rusholme also referred to improvements in freight train services. These, he emphasised, would be increased and accelerated as modernisation progressed. The fitting of continuous brakes to all freight vehicles would enable this to be done and the work was going ahead.

Poster produced by the department of the Public Relations & Publicity Officer, Scottish Region

Thor Power Tool Co. Ltd. Change of Address.—The offices of the Thor Power Tool Co. Ltd. were moved on September 29, from 40, Broadway, to 34, Victoria Street, Westminster, London, S.W.1.

Delay on Metropolitan Line, London Transport.—Five London Transport trains were stranded in the Metropolitan Line tunnel between Finchley Road and Baker Street for nearly 2 hr. last Monday. The 7.53 a.m. train from Watford broke an axle, and the 800 passengers walked back along the track to the disused Lords Station which was opened to let them out. The 8.7 a.m. from Uxbridge was reversed to let passengers out at Finchley Road, and the 8.3 a.m. from Watford was stopped at the disused Swiss Cottage Station. Both the 7.59 a.m. from Uxbridge and the 8.23 a.m. from Harrow stopped near the disused Marlborough Road Station, and were then shunted back into Finchley Road.

Bridge Reconstruction on Liverpool and Manchester Line, L.M. Region.—British Railways, London Midland Region, is reconstructing a portion of the bridge which carries the railway over Hampson Street between Manchester Exchange and Ordsall Lane and this will be rolled into position during the coming weekend. The new superstructure formed of welded steel main girders, cross girders, and concrete deck, has been built on rolling-in trestles alongside the existing span. The work is being carried out under Mr. J. Taylor Thompson, Chief Civil Engineer, London Midland Region, British Railways, and the contractors for the supply and erection of the steelwork are the Butterley Co. Ltd. The old bridge was constructed about the year 1845, the square span being 54 ft., and the square span being 70 ft. between abutments.

New Motor Vessel for Humber Lines.—The second of the two new motor vessels, built by Brooke Marine Limited of Lowestoft for Associated Humber Lines Limited, was launched yesterday at Lowestoft, and named *Melrose Abbey* by Mrs. G. E. van Walsum, wife of the Burgomaster of Rotterdam. The new vessel is expected to be in service about the end of this year on the Hull-Rotterdam service.

Southern Railway Association.—The 11th Annual Reunion Luncheon of the Southern Railway Association was held at the Charing Cross Hotel on Tuesday, October 14, with Colonel Sir Eric Gore-Browne, the last Chairman of the Southern Railway Company, presiding. Among other members present were the Rt. Hon. Henry Brooke, Sir Eustace Missenden, Sir John Elliot, and Maj-General Gilbert Szlumper. Sir Philip Warter, Chairman of the Southern Area Board of the British Transport Commission, and Mr. Charles Hopkins, General Manager of the Southern Region of British Railways, were the Association's guests.

Forthcoming Meetings

October 20 (*Mon.*).—Permanent Way Institution, London Section, at the headquarters of the British Transport Commission, 222, Marylebone Road, London, N.W.1, at 6.30 p.m. Paper (illustrated) "Temple Mills Marshalling Yard," by Mr. E. G. Newens.

October 20 (*Mon.*).—Permanent Way Institution, Merseyside Branch, at

Woodside Hotel, Birkenhead, at 7.30 p.m. Paper on "The railways and traffic of Lever Brothers, Port Sunlight," by Mr. F. Blair.

October 20 (*Mon.*).—Permanent Way Institution, West Midlands Branch, at 64, Holyhead Road, Coventry, at 7.30 p.m. Illustrated talk by Mr. J. B. C. McCann "Further railway travel in colour, with special reference to the 1958 R.C.T.S. tour in Austria."

October 20 (*Mon.*).—Institute of Transport, Sussex Group, at the Arlington Hotel, Brighton, at 6.30 p.m. Paper on "Transport, electricity and the future," by Mr. C. J. George, Commercial & Development Department, Electricity Council.

October 21 (*Tue.*).—Institute of Transport, Humberside Section, at Samman House, Bowlalley Lane, Hull, at 7.30 p.m. Paper on "Training for transport management," by Mr. D. Stewart.

October 23 (*Thu.*).—Model Railway Club, at Caxton Hall, Westminster, S.W.1, at 7.45 p.m., "Swiss railway photos": Lecture by Mr. P. J. Kelley.

October 23 (*Thu.*).—Institution of Railway Signal Engineers, London Section, at the Institution of Electrical Engineers, Savoy Place, London, W.C.2, at 6 p.m. Paper on "Automatic junction working and route setting by programme," by Mr. R. Dell.

October 24 (*Fri.*).—Institute of Traffic Administration, Kent & South Eastern Centre, at the Royal Star Hotel, Maidstone, at 7.30 p.m. Inaugural meeting. Paper on "The Monorail," by Sir Alfred Bossom.

October 24 (*Fri.*).—Railway Correspondence & Travel Society, B.B.C. television, "The Lion's Den," at 10.15 p.m.

October 25 (*Sat.*) to October 26 (*Sun.*).—British Railways (Southern Region) Lecture & Debating Society. Visit to York and district.

October 25 (*Sat.*).—Institution of Railway Signal Engineers, Bristol Section. Visit to the works of the Westinghouse Brake & Signal Co. Ltd., Chippenham.

October 25 (*Sat.*).—Railway Correspondence & Travel Society, Sussex & Kent Branch, at the Railway Hotel, Brighton, at 7 p.m. Paper on "The locomotives of the S.E.R.," by Mr. N. Wakeman.

October 28 (*Tue.*).—Institute of Transport, Metropolitan Graduate & Student Society, at 80, Portland Place, London, W.1, at 5.45 for 6.15 p.m. Paper on "Operating practice on the railways of London Transport," by Mr. R. C. Hider.

October 28 (*Tue*).—Railway Correspondence & Travel Society, East Midlands Branch, at the N.C.S. Guild Room, Toll Street, Nottingham, at 7 30 p.m. A British Railways official will give an address on "Rates, fares. branch line working, etc."

October 29 (*Wed.*).—Railway Students' Association, at the London School of Economics & Political Science, Houghton Street, Aldwych, W.C.2., at 6.15 p.m. Mr. A. B. B. Valentine's Presidential Address.

October 30 (*Thu.*).—British (Western Region) London Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Paper (illustrated) on St. Mary's Hospital and Paddington," by Mr. A. Dickson Wright, Consulting Surgeon.

OFFICIAL NOTICES

ASSISTANT RAILWAY EMPLOYMENT INSPECTOR: Ministry of Transport and Civil Aviation. Pensionable post in London for a man at least 32 on 1.10.58 requiring at least 10 years' experience of practical railway service, sound knowledge of British railway operation and maintenance and wide mechanical experience. Ability to write clear and concise reports essential. London salary scale £1,030-£1,250. Write Civil Service Commission, 30 Old Burlington Street, London, W.1, for application form quoting S4894/58/11. Closing date 25th November, 1958.

LONDON TRANSPORT EXECUTIVE require DRAUGHTSMEN for General Technical Assistant vacancies in Development Drawing Office, Department of the Chief Mechanical Engineer (Railways), Acton Works. Applicants should have had a sound general education and technical education to National Certificate standard. Some experience of maintenance of railway rolling stock advantageous. Salary range £438 at age 21 rising to £767 according to age, qualifications and experience. Additional payments for certain recognised qualifications. Contributory superannuation scheme after probation. Medical examination; free travel. Applications within 7 days to Staff and Welfare Officer (F/EV706), London Transport, 55 Broadway, S.W.1.

Leading Iron and Steel Company

manufacturing permanent way equipment requires SALES DEVELOPMENT ENGINEER, age 30 to 45, with appropriate professional qualifications and experience with a railway company or manufacturer of railway equipment.

This important post will only be filled by a man who is capable of acting, on the one hand, as the Company's REPRESENTATIVE ON TECHNICAL SELLING MISSIONS ABROAD AND, on the other, in an important CONSULTATIVE CAPACITY at the Works on which he will be based.

The duties will include:—

1. Sales promotion of the Company's products in the permanent way field at home and abroad.
2. Maintaining contact with permanent way engineers in British Railways and Overseas Railways and those engaged in research and development.
3. Advising on the design and development of steel permanent way equipment.
4. Writing articles for publication in the Technical Press.

Box 687, THE RAILWAY GAZETTE, 33 *Tothill Street, London, S.W.*1.

THE NIGERIAN RAILWAY CORPORATION invites applications for the following post:
SENIOR ASSISTANT TECHNICAL INSTRUCTOR (DIESEL)

Duties: The officer would be required to organise and equip a Diesel Workshop in the Apprentice School and give both theoretical and practical instruction on diesel engine maintenance.

Qualifications: Candidates should have served an apprenticeship with a reputable firm of Diesel Locomotive Manufacturers or Mechanical Engineers with subsequent practical experience on the maintenance of diesel-traction or medium size diesel engines and have some instructing experience.

Salary: In scale £1,000 by £50 per annum to £1,500 (inclusive of Overseas Pay) per annum. Starting salary according to qualifications and experience. Appointments may be on pensionable terms or on contract with a gratuity payable on completion of contract at the rate of £16 13s. 4d. to £25 for each completed month of service.

Tours: 15 months in Nigeria followed by 15 weeks' leave on full pay.

Quarters: Partly furnished quarters are provided at low rental.

Allowances: There are attractive family, travelling, transport and other allowances.

Send postcard before 4th November, 1958, mentioning the post and this paper for further particulars and application form to:

The London Representative,
Nigerian Railway Corporation,
Nigeria House, 9, Northumberland Avenue,
London, W.C.2.

GHANA Public Service Commission. Applications are invited for the post of DEPUTY CHIEF ENGINEER, GHANA RAILWAY, to assist Chief Engineer for all Railway and Harbour Works in the preparation of all estimates and control of all expenditure in the Civil Engineering Department and relieve Chief Engineer when on leave. Must possess B.Sc. (Eng.) or other recognised Engineering degree and have obtained not less than 12 years experience after obtaining degree of which not less than 7 years must be on a railway, or passed Parts I and II of the examination of the I.C.E. with not less than 10 years approved experience after passing, of which at least 6 years must be on a railway; and with good organising and administrative ability. Preference will be given to Engineers with both Railway and Harbour experience. Candidates must not be under 35 years of age. Salary £2,280 by £60 to £2,400 a year. Appointment on contract for two tours each of 18-24 months duration. Gratuity at rate of £12 10s. for each completed month of residential service payable on completion of contract. Free first class passages for officer, wife and up to 3 children under 18 years and in addition an education allowance for children when not resident in Ghana of £100 a child for up to 3 children under 18 years. Generous home leave on full pay. Income tax at low local rates. Preservation of superannuation or pension rights, where applicable, can be arranged. For further particulars and application form write, stating age, qualifications and experience to The Director of Recruitment, Ghana High Commissioner's Office, 13, Belgrave Square, London, S.W.1.

Railway Stock Market

Strong and active conditions have again ruled in stock markets. The record balance of payments surplus of the United Kingdom for the first half of this year having helped sentiment because it emphasises that the strength of the £ is soundly based. It is believed that the good balance of payments trend has been well maintained in the current half of the year and that the authorities will be able to take further steps to help industry. Moreover, hopes are growing that next year's Budget will bring a cut in taxes.

With business on the Stock Exchange broadening, securities which so far have not participated in the upward trend attracted attention. Among foreign rails, Antofagasta came into demand, partly in the belief that the price of copper is likely to hold a good part of its recent advance. Antofagasta ordinary stock rose to 18½, which is within half a point of the best so far reached this year and compares with 14 a week ago. Moreover, the preference stock gained 5 points at 35, which compares with the year's peak of 37.

Chilean Northern first debentures were 46, and Costa Rica ordinary stock 16 with the second debentures 90½. Brazil Railway Bonds were 5½ and United of Havana second income stock remained at 6½. Guayaquil & Quito assented bonds were 76½.

International of Central America common shares continued to be quoted at $18½ with the preferred at $111.

Canadian Pacifics eased from $54¼ a week ago to $53¾; the 4 per cent preference stock strengthened from 55 to 55½ and the 4 per cent debentures at 67⅛ were virtually the same as a week ago. White Pass shares were $14¼.

In other directions, West of India Portuguese capital stock was 76 xd, and the 5 per cent debentures 68. Barsi ordinary stock was quoted at 24. Midland of Western Australia remained at 5½. Nyasaland Railways shares have been more active around 12s. 6d. with business recorded up to 13s.

Westinghouse Brake shares have continued in demand with a fresh rise of 1s. to 42s. 9d. a new high for the year, while elsewhere, Crompton Parkinson 5s. shares have been prominent on talk of higher dividend possibilities, and at 13s. 6d. compared with 11s. 10½d. a week ago. English Electric moved slightly higher at 59s. 3d. General Electric again changed hands around 38s. 3d. Wagon Repairs 5s. shares showed firmness at 10s. 6d., but after the rise which followed the results, Gloucester Wagon 10s. shares encountered some profit-taking, and at 16s. 10½d. compared with 17s. 3d. a week ago. G. D. Peters were 25s. 7½d.xd., and Charles Roberts 5s. shares have been maintained at 10s. 3d. North British Locomotive eased from 12s. 3d. to 12s. Beyer Peacock 5s. shares firmed up to 9s.